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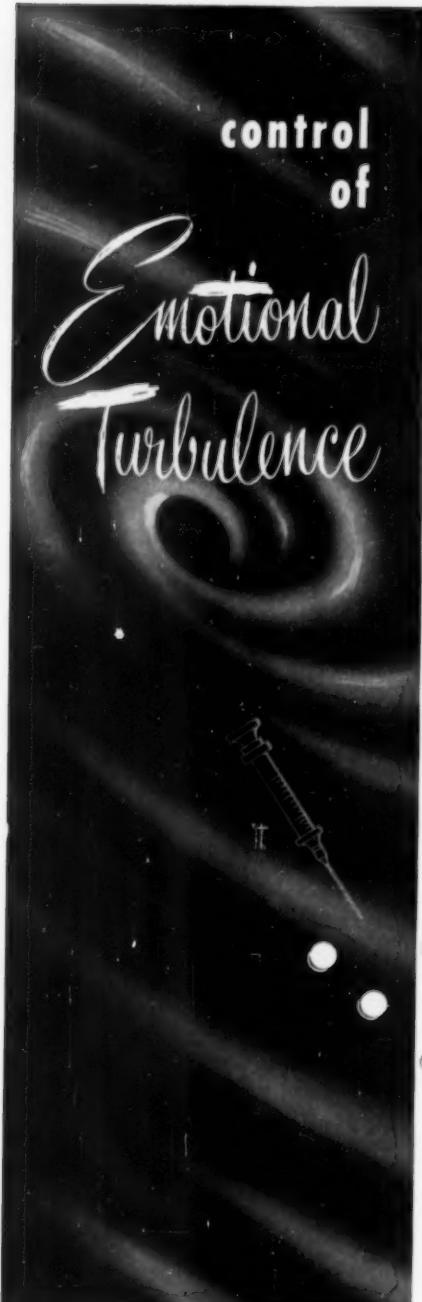
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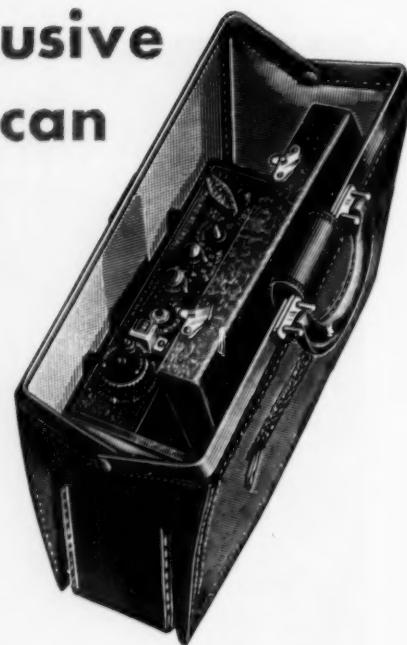
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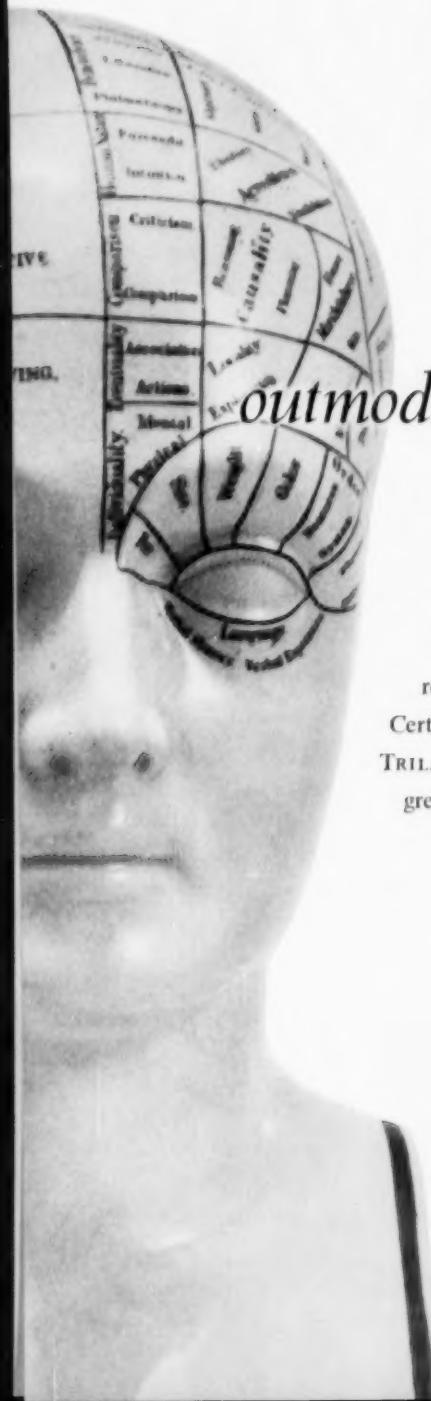
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AN APPRAISAL OF CHLORPROMAZINE¹

GENERAL PRINCIPLES FOR ADMINISTRATION OF CHLORPROMAZINE, BASED ON EXPERIENCE WITH 1,090 PATIENTS

N. WILLIAM WINKELMAN, JR., M.D.^{2, 3}

INTRODUCTION

A preliminary report on the present investigation was published in the *J.A.M.A.*, on May 1, 1954, at which time certain clinical findings were observed and conclusions reached concerning the use of chlorpromazine in the treatment of psychiatric disorders; 142 cases were reported. The present paper continues that study, and reports 1,090 psychiatric patients treated with chlorpromazine and followed up to three years.

Although only recently introduced, chlorpromazine has become one of the most widely used and discussed compounds in the world. Remarkable claims have been made for it in both the lay and the medical literature. On the other hand, some observers have reported less effectiveness than that generally claimed. Furthermore, there have been reports of serious side-effects that could contraindicate use of the drug almost entirely. All this is confusing enough to warrant a drastic re-evaluation and clarification of the precise risk and a general, realistic appraisal of what can and what cannot be expected from the drug, based on this series of 1,090 psychiatric patients which, we believe, has been followed longer than any other in the United States.

MATERIAL AND METHOD

The method of treating the 1,090 patients has been such that the original plan of therapy was adjusted to experience gained during the early months. After a diagnostic, psychodynamic, and prognostic evaluation—and

psychological tests, if indicated—the patients were started on the drug. An attempt was made to control every possible variable. However, the comparative effectiveness between a drug that is supplied free and one for which the patient pays has not, as far as I know, been studied. Each patient was given a 2-week supply of chlorpromazine, printed instructions, a return appointment in one week, and a telephone number from which he could obtain information before the next appointment.

Oral administration was predominant in this series. The dosage was gradually increased, as it could be tolerated, week by week, until the drug achieved the optimum therapeutic effect. The optimum dosage may be defined as the gradually determined amount of drug which produces the most effective clinical result, beyond which increases will produce no further improvement, and undesirable reactions may prove troublesome.

The literature points out that chlorpromazine dosage is highly individualized. We found this to be true with the initial dosage, the optimum therapeutic dosage, the maximally tolerated dosage, and in the increase of dosage. For example, some patients could tolerate equally well 35 times the dosage tolerated by others.

These factors make it impossible to standardize treatment, and so complicate treatment that patients must be carefully and frequently followed. A study was made of 200 patients, already taking chlorpromazine, referred by general practitioners and non-psychiatric specialists to the psychiatric department of the Medical Center and in private practice. Although 110 patients had been taking the drug for more than one month, the starting dosage had been maintained in 98 of them. In nearly all cases this was either 10 mg. or 25 mg. t.i.d.

Table 1 shows that three-fourths of the 1,090 patients in this series have been followed for 12 months or longer, more than

¹ Read at the 112th annual meeting of The American Psychiatric Association, Chicago, Ill., April 30-May 4, 1956.

² From the Sidney Hillman Medical Center, Philadelphia, Pa., Dr. Joseph Langbord, medical director. Drs. Herbert Schiller, Irving Golden, and Jay Joseph gave technical assistance and Dr. Martin Sampson numerous suggestions in this study. The chlorpromazine was supplied by Smith, Kline, and French Laboratories as Thorazine.

³ Address: Suite 106, 1930 Chestnut St., Philadelphia 3, Pa.

TABLE I
MONTHS OF TREATMENT

Duration	No. of patients
Less than 1 week	85
4 mos.	100
8 mos.	105
12 mos.	213
18 mos.	244
24 mos.	163
30 mos.	100
36 mos.	75

half for 18 months or longer, and one-third for 24 months or longer.

This series included 652 patients with all varieties of psychoneuroses; 130 with schizophrenias, acute and chronic, both inpatients and outpatients; 115 with senile psychoses, both inpatients and outpatients; 50 children with various behavior disorders; 53 psychophysiological reactions; and 5 cases of central nervous system syphilis. Most of the patients received only chlorpromazine; other treatment is discussed below. The psychoneurotics were divided into those treated with chlorpromazine alone and those treated with combined chlorpromazine-analytic group psychotherapy. The distribution of the sexes was about equal; ages varied from 6 to 94.

Chlorpromazine therapy was thought of as either primary or secondary treatment. It was primary—the most basic therapeutic available—in patients whose disease entity, personality, age, or social situation ruled out other treatment. It was secondary—ancillary and more symptomatic—in patients able to receive and respond to other treatment. In either case, our aim was to treat the outpatient effectively while keeping him on the job.

At each visit a complete evaluation was made. This was a major problem. Each patient's clinical syndrome was divided into each of its component parts expressed as reactions described in the new Standard Revised Nomenclature (1) approved by The American Psychiatric Association. A study of the individual reactions alone, however, is also inadequate for total appraisal. There are too many spontaneous changes and too many symptom substitutions. Combined total change and individual reaction change were regarded as necessary to make a composite picture. Both the individual reactions and the total picture were evaluated by at least two trained observers and the patient.

In this way, a qualitatively and quantitatively more accurate evaluation of the clinical status can be obtained.

RESULTS

Repeating the conclusions of my preliminary report of two years ago would be merely re-echoing what have, happily, become generally recognized observations of other investigators. Shortly after I gave the drug its first intensive clinical trial in this country, I wrote the manufacturer that it was particularly remarkable in its effect on anxiety and agitation. Since that time, the weight of evidence in the literature has strongly supported these impressions.

The re-evaluation mentioned earlier was initiated and the project continued to its present length in order to find answers to certain basic questions. How much further are we able to go now in describing the actions of chlorpromazine? How effective is the drug in the psychoneurotic reactions treated in the usual psychiatric practice or clinic? Can the response in a particular situation be predicted? Should the same dosage be used over long periods, or should dosage be increased or decreased? Will chlorpromazine therapy be more effective than the usual sedatives, or well-oriented psychotherapy? Will undesirable reactions occur? What can be expected with chronic and even acute schizophrenic patients treated on an ambulatory basis? What exactly can be accomplished in the hard-to-manage senile? How effective is the drug in children? Is it effective in the psychophysiological disorders? When should it be given a trial? Does the patient suffer a relapse if the drug is stopped? When would this occur? How can this be prevented? How does chlorpromazine really "stack up" when compared with phenobarbital or with a placebo? How does it come out in a double-blind test? When can chlorpromazine be advantageously used in conjunction with psychotherapy? Are the results maintained while patients are on the drug for one, two, or three years? We believe that our results and the conclusions based upon them enable us to give answers to these questions. The remainder of this report presents those answers.

In such a large series, the results—including a study of relapse rate, and two con-

TABLE 2

FINAL RESULTS: CLINICAL SYNDROMES

Improvement rating *	Psychoneuroses (652)		Schizophrenias (130)	
	Patients	Percent	Patients	Percent
4	39	6	25	19
3	241	37	36	28
2	198	30	18	14
1	97	15	22	17
0	77	12	29	22

* Improvement ratings in all tables are made on this basis: 4 = 100% relief of symptoms; 3 = marked (75%) improvement; 2 = moderate (50%) improvement; 1 = slight (25%) improvement; and 0 = no essential change.

trol studies—are necessarily involved and difficult to present. They are thus divided into four parts. Unless otherwise indicated, all results imply that the patients involved were maintained on the drug.

Ratings of improvement are shown in Table 2. Each component reaction and the over-all picture were separately rated on a scale from 0 to 4: 0 indicates no essential change; 1 indicates a slight but definite and consistent improvement, about 25%; 2 indicates a consistently moderate improvement, about 50%; 3 indicates a marked improvement equal to about 75%; 4 indicates total clinical improvement or 100% relief of symptoms.

GENERAL OBSERVATIONS: 1,090 PATIENTS

Of the 652 patients with psychoneurotic reactions (Table 2), 6% showed a complete and consistent absence of symptoms, and an additional 37% showed a marked improvement that stood the test of critical, long-term follow-up. Only 12% showed no essential change. These figures are based on all durations of treatment. It was found that, if the dosage of the drug was carefully and accurately followed and altered to suit the patient, the 6-month result could be maintained, provided acute traumatic events—such as the death of a parent—did not occur. The dosage must be increased during these times of stress.

The results of studying the individual reactions in the psychoneuroses were slightly more impressive (Table 3), probably because a specific reaction was under our attention and was being measured alone, while some of this reaction could well have been converted to another kind of reaction.

In each category of improvement, anxiety reactions responded far better than any other disorder: 84% responded moderately well or better, and only 7% did not respond at all. Sixty percent of the conversion reactions responded moderately well or better,

TABLE 3
FINAL RESULTS: INDIVIDUAL REACTIONS

Psychoneurotic Reactions

(1,218)

Improvement	Anxiety (595)		Conversion (395)		Depressive (86)		Obsessive (52)		Phobic (90)	
	Patients	Percent	Patients	Percent	Patients	Percent	Patients	Percent	Patients	Percent
4	66	11	34	9	2	2	2	4	6	7
3	275	46	82	21	5	6	8	15	21	23
2	156	26	124	31	28	33	10	20	20	22
1	55	9	98	25	20	23	12	23	30	33
0	43	7	56	14	31	35	20	38	13	15

Schizophrenic Reactions

(210)

Improvement	Hallucinatory (50)		Delusional (80)		Agitated (60)		Depressive (20)	
	Patients	Percent	Patients	Percent	Patients	Percent	Patients	Percent
4	4	8	6	8	20	33	0	—
3	11	22	15	19	30	50	1	5
2	13	26	10	13	7	12	0	—
1	6	12	19	23	0	—	5	25
0	16	32	30	38	3	5	14	70

while only 14% did not respond at all. It may seem surprising that as many as 41% of the depressive reactions responded moderately well or better. However, many of these depressions were secondary to or aggravated by other reactions. Accordingly, when the other reactions were relieved, this type of depression responded, too. Only two obsessive reactions were fully relieved, but in many more the drug gave some measure of relief—39% moderately improved or better. In 38% the drug had essentially little or no effect. The phobias showed more encouraging results, with 52% responding moderately well or better, and only 15% not responding at all.

Thus, we can predict that enough benefit to administer the drug will be obtained in 17 of 20 patients with anxiety, 15 of 20 with conversion reactions, 10 of 20 with phobias, 10 of 20 with secondary depressive phenomena (but less than half that in pure depressions), and 8 of 20 with obsessions.

Duration of illness in the schizophrenics varied from 1 month to 30 years. Most of these were outpatients. Chlorpromazine was used to maintain the outpatient schizophrenic at his job and prevent a costly hospitalization. The over-all results in schizophrenia (Table 2) show 19% free from all symptoms, and 61% obtaining moderate results or better; 22% failed to respond at all, and these were, as has been reported by other investigators, chronic cases, without overactivity, of many years duration. A break-down into the component symptoms is of interest and can be used to help predict responses (Table 3). Slightly more than half of the hallucinatory reactions were relieved moderately well or better, but one-third of the patients showed no change at all. While 27% of the delusional reactions had marked to total relief, 61% were not affected or only slightly so. As is now generally observed, agitations responded very well, 83% showing marked to total relief, and only 5% showing no change. The depressive reactions in schizophrenia responded very poorly; 95% of the patients showed either no response or a minimal response, and there were no total remissions.

The dosages used in the schizophrenias were double to triple those in the psycho-neuroses—more drowsiness occurred, but we

encouraged the patients to remain at their jobs, and most of the outpatients did so. About 40% of the schizophrenics were adequately treated as outpatients, one-third of them requiring dextro-amphetamine sulfate to help fight drowsiness. The other 60% were unable to work and were hospitalized and treated in the conventional manner.

The clinical results with the behavior problems of the aged—the senile and arteriosclerotic psychoses—responded in an extremely gratifying manner (Table 4): 86% responded moderately well or better; 74% showed marked relief or better, and only 6% showed no response. The total life pattern was changed. Aggression and destructiveness were lost. Night became the time for sleeping. Appetite improved and delusions, if present, were reduced. Real cooperation made its appearance. The drug enabled many of these older people to remain at home.

The behavior problems of children, both organically and functionally caused, responded well (Table 4): 78% responded moderately well or better, and only 12% showed no response.

The group with psychophysiological disorders was a relatively small one. The results (Table 4) do not have too much meaning, for the various somatic reactions are grouped together. Our impression is that all the psychosomatic manifestations benefited to varying degrees, but not remarkably so. More investigation is certainly needed in this area.

Five patients with central nervous system syphilis associated with psychosis characterized by agitation, delirium, delusions, and wandering were treated with chlorpromazine, in addition to primary therapy (penicillin) with extremely gratifying results. Until a true, beneficial change occurred as a result of

TABLE 4
FINAL RESULTS

Improve- ment	Behavior problems (165)				Psychophysio- logical reactions (53)	
	Aged (115)		Children (50)		Pa- tients	Per- cent
	Pa- tients	Per- cent	Pa- tients	Per- cent		
4.....	28	24	6	12	8	15
3.....	59	51	12	24	9	17
2.....	12	10	21	42	16	30
1.....	9	8	5	10	12	23
0.....	7	6	6	12	8	15

adequate penicillin therapy, chlorpromazine very adequately controlled symptoms.

The remaining 85 patients in the series spontaneously stopped the drug in less than one week, owing to what might be called a negative psychological response, and these cases are not included in the tables of results. These patients were severely hypochondriacal with bizarre symptoms and interpreted subjectively-experienced reactions during chlorpromazine therapy as serious manifestations of disease, or as serious effects of the drug. Their reactions were not associated with a fall in blood pressure. That this response was not a sensitivity peculiar to the drug is shown by the fact that the same patients showed similar unexpected subjective reactions in trials with other drugs. They did not show normal response to any treatment. When some were given chlorpromazine in an unrecognized form, in smaller or often in the same dosage, the response was not seen.

Table 5 shows that the optimum dosage for the vast majority of patients in our series was between 75 mg. and 300 mg. a day. However, individual dosages did range as high as 1,250 mg. a day.

Relapse Rate After Withdrawal of Chlorpromazine.—Comparing the chlorpromazine results with combined chlorpromazine and analytic psychotherapy is not really possible, except on quite a long-term basis. This is because the almost immediate effectiveness of a drug contrasts sharply with the slow, up-and-down progress in analytic therapy, during which symptomatology is not the sole basis for progress. However, after looking back over a 3-year period, I am quite certain that the 100 patients in analytic psychotherapy or group psychotherapy responded sig-

nificantly better than those in treatment with the drug alone.

Investigating the relapse rate is of prime importance. We made a careful study in the 652 cases of psychoneuroses. All had been on optimum maintenance dosages for a minimum of 6 months. As shown in Table 6, the first two groups—divided into those on chlorpromazine alone and those with combined chlorpromazine-analytic group psychotherapy—were subjected to sudden withdrawal. Another group, receiving combined therapy, had the drug withdrawn, but slowly over the course of a week.

The results are of great help in indicating the most effective treatment. First, there is no doubt that one takes a great chance in withdrawing chlorpromazine. Second, the chance is significantly reduced when the drug is withdrawn slowly. Third, when well-oriented psychotherapy is utilized as the primary treatment, and chlorpromazine is given as secondary treatment, the danger of relapse after withdrawal is still further and considerably reduced.

Control Study: Chlorpromazine vs. Phenobarbital and Placebo.—One control study utilized 50 patients given a placebo and 50 similar patients given phenobarbital. The results (Table 7) are surprisingly similar, and in both groups much less encouraging than those with chlorpromazine. Chlorpromazine is clearly superior to phenobarbital, which is not much more effective than the placebo.

Double-Blind Study: Placebo vs. Chlorpromazine.—Our findings in the double-blind study (Table 8) are in agreement with the few available studies on the effects of a

TABLE 5
OPTIMUM DOSAGES

Mgs.	No. of patients
Under 50	21
75-100	290
125-200	308
225-300	205
325-400	70
425-600	48
625-800	41
825-1000	13
1025-1250	11

TABLE 6
RELAPSE RATE
(All patients treated 6 months or longer)

Period after treatment	Sudden withdrawal: No psychotherapy	Slow withdrawal:	
		No psychotherapy	Group psychotherapy
1 week	33	20	25
2 weeks	45	30	30
4 weeks	55	40	34
2 months	65	50	36
4 months	75	60	38
6 months	80	65	40

TABLE 7

CONTROL STUDY: PLACEBO vs. PHENOBARBITAL IN PSYCHONEUROTIC REACTIONS
(3 mos. Duration)

Improvement rating	Anxiety		Conversion		Depressive		Obsessive		Phobic	
	Placebo (45) Patients Percent	Phenobarbital (45) Patients Percent	Placebo (29) Patients Percent	Phenobarbital (32) Patients Percent	Placebo (11) Patients Percent	Phenobarbital (12) Patients Percent	Placebo (8) Patients Percent	Phenobarbital (8) Patients Percent	Placebo (7) Patients Percent	Phenobarbital (6) Patients Percent
4.....	2 4	4 9	3 10	1 3	0 —	0 —	0 —	0 —	0 —	0 —
3.....	7 16	8 18	6 21	3 9	0 —	0 —	0 —	0 —	1 14	0 —
2.....	6 13	9 20	4 14	8 16	2 18	1 8	1 13	0 —	1 14	2 33
1.....	5 11	9 20	6 21	8 25	3 27	2 17	1 13	1 20	1 14	1 17
0.....	25 56	15 33	10 34	15 47	6 55	8 67	6 75	4 80	4 57	3 50

TABLE 8

DOUBLE-BLIND STUDY: CHLORPROMAZINE vs. PLACEBO IN PSYCHONEUROTIC REACTIONS

Improvement rating	Anxiety		Conversion		Depressive		Obsessive		Phobic	
	Placebo (90) Patients Percent	Chlorpromazine (91) Patients Percent	Placebo (62) Patients Percent	Chlorpromazine (70) Patients Percent	Placebo (24) Patients Percent	Chlorpromazine (20) Patients Percent	Placebo (10) Patients Percent	Chlorpromazine (10) Patients Percent	Placebo (14) Patients Percent	Chlorpromazine (12) Patients Percent
4.....	5 6	12 13	8 9	10 14	1 4	1 6	0 —	0 —	0 —	1 9
3.....	13 14	47 52	13 13	20 29	10 12	5 25	0 —	2 20	2 14	2 17
2.....	11 12	15 16	13 21	16 23	3 12	5 25	1 10	2 20	2 14	3 25
1.....	14 16	10 11	10 16	10 14	4 17	4 20	1 10	3 30	3 21	2 17
0.....	47 52	7 8	26 42	14 20	14 58	8 40	8 80	3 30	7 50	4 33

placebo. Beecher (2) reported $35\% \pm 2.2\%$ and Wolf and Pinsky(3) reported 30% significant effectiveness with placebos. In comparison, the chlorpromazine effect is approximately double that of the placebo. Beecher reported that while 35% of pain is relieved by a placebo, $\frac{1}{2}$ grain of morphine relieves 75%. Chlorpromazine stands in an even more favorable relationship.

of the patients complained of some degree of drowsiness, but only one-quarter found this disturbing enough to interfere with their daily activities. Doses of caffeine citrate up to 600 mg. a day were not nearly so effective as 5-10 mg. of dextro-amphetamine sulfate in relieving this. Dry mouth and a bad taste were common, but of no significance, and generally passed. The appetite was often in-

UNDESIRABLE REACTIONS

Chlorpromazine possesses numerous, widespread pharmacologic activities, and we must accordingly understand that there will be some not particularly desirable side-effects. However, we must look upon them objectively and appraise them accordingly. Fortunately, nearly all of them are mild and disappear spontaneously, after modification of dosage, or after the rarely needed cessation of treatment. As with most drugs, these reactions are unpredictable, and they are for the most part unrelated to dosage.

As Table 9 indicates, about three-quarters

TABLE 9

UNDESIRABLE REACTIONS

Reaction	No. cases
Disturbing drowsiness	274
Undisturbing drowsiness	562
Dry mouth	178
Bitter taste	92
Weight gain	136
Excessive weight gain	38
Constipation	23
Dermatitis	36
Photosensitivity	31
Increased dreaming	163
Palpitations	32
Parkinsonism-like syndrome	2
Jaundice	9

creased and weight was gained, but in only a small percentage was it excessive. Palpitations of the heart and constipation were occasionally seen. We have not seen a full-blown case of Parkinsonism. Two patients exhibited the characteristic facies and gait, but without cog-wheel rigidity or any sign of a tremor.

A very small percentage of the patients demonstrated a dermatitis. Some were kept on the drug, and the dermatitis disappeared. In some others, antihistaminics seemed to help; in any event, the eruption disappeared a few days after the drug was withdrawn. About 3% of our patients developed photosensitivity. A marked overreaction to the sun with erythema and pruritis was seen, primarily in the summer months. After observing these reactions in our patients, Cahn and Levy (4) concluded that the sensitivity was only to intense summer sunlight containing ultraviolet wave-lengths of between approximately 3,025 and 2,968 angstrom units.

Although there are rare reports of serious blood changes, such as agranulocytosis, we saw no such complications.

Chlorpromazine icterus—an acute febrile biliary duct obstruction caused by a sensitivity reaction—is essentially the only other undesired reaction that need be taken seriously. In 1,000 patients we saw 9 cases of jaundice, an incidence of 0.9%. We carefully studied 230 patients by doing liver function tests before treatment, and then every few weeks during treatment. The conclusions from this study(5) indicate several helpful facts: (1) Chlorpromazine did not aggravate previously existing liver disease. (2) All 9 cases developed within 5 weeks and recovered within 2 to 10 weeks. (3) The lesion produced by chlorpromazine is due to hypersensitivity—once present and the hypersensitivity not overcome, it may be reproduced in some patients by a single therapeutic dose of the drug. Re-use of chlorpromazine in a sensitized patient should be undertaken with great caution.

THE ACTION OF CHLORPROMAZINE

We do not have enough knowledge at present about this and related drugs for their accurate and scientific classification by a term that will refer specifically to these com-

pounds and exclude others, such as the opium derivatives, alcohol, scopolamine, and the standard sedatives. *Ataraxia* and *tranquilization* certainly do not meet this need. These terms lack the precise boundaries necessary to differentiate one central nervous system depressant from another, in view of the many dozens of drugs that are currently available and have overlapping actions, yet differ widely in many ways.

The new term should include exact reference to the mode of action, the site of action, and the chemical structure, or as much information about these as is compatible with brevity and knowledge. Until the time that we find a name that will fulfill these requirements, several descriptive terms, based on experimental work and clinical observations, present themselves. Since the drug acts primarily on the reticular formation, but seems also to act on the hypothalamus, the basal ganglia, thalamus, subcortical and cortical regions, and since it exerts a depressive effect, we can accordingly call it a reticular formation depressant or, to use a more general term, a diencephalic depressant. Furthermore, since chlorpromazine is a phenothiazine derivative, it and other such derivatives could be so classified. In contrast with other central nervous system depressants that act in increasing dosages from the cortex downward, chlorpromazine and similar drugs act more or less from the lower centers upward, and could accordingly be termed "ascending depressants." Clinically, since the action of the drug causes disinterest or indifference to exogenous or endogenous painful stimuli, it could be called an indifference-producer.

Incidentally, one wonders whether the mental state produced by chlorpromazine, which seems to make the patient indifferent to some of his symptoms, and relieves anxiety in doing so, is related in some way to a naturally occurring conversion hysteria. In both states the patient exhibits outward calm, unconcern, and satisfied indifference. In the chlorpromazine-treated neuropsychiatric patient, the energy accompanying anxiety is combatted chemically. Some patients receiving the drug reveal this energy in increased, vivid, emotional dreaming. In the patient suffering conversion hysteria, the energy is partially or fully released in the conversion symptoms,

e.g., loss of vision or paralysis of a limb or segment of the body. The conversion hysteria is an adjustment mechanism of the patient faced with conflicting wishes and drives or other incompatible psychic elements. Since this patient's conflict cannot be resolved, it is repressed, rather than chemically combatted, and the accompanying energy manifests itself in the conversion hysterical symptom. The symptom—motor, sensory, psychic, or visceral—is actually the method of adjustment, and it serves as a retreat from anxiety. The conversion hysteria is characterized by a state of indifference and complacency, and, to quote Noyes(6), "pathological tranquility of mind," described by Janet as *la belle indifference*. The clinician who has seen large numbers of patients treated with chlorpromazine will readily note the similarities.

Further consideration and study of the similarities in the mental states of these two types of patients might prove mutually informative. By drawing comparisons between the effects on the brain of a conversion hysteria, on the one hand, and of chlorpromazine, on the other, we might gain increased knowledge of both states.

DISCUSSION AND CONCLUSIONS

1. Chlorpromazine is a highly effective drug in many psychiatric entities, more effective in some than in others, and in groups of patients suffering the various syndromes, although its exact effectiveness cannot be predicted in the individual patient.

2. It is more effective in severe symptomatology than in mild, and is most effective when there is overactivity in any subdivision of psychomotor activity, such as anxiety, agitation, panic, hostility, manic behavior, phobic activity, obsessional activity, and delusional and hallucinatory activity. Acute emotional illnesses have a better prognosis than chronic illnesses; chronic hypochondriasis and personality problems offer very poor prognosis.

3. Since its exact effectiveness cannot be accurately predicted, chlorpromazine must be initiated on a 6-8 week trial basis. With the accompanying tables as a rough basis for prediction, each case must be evaluated for treatment separately. To predict, the clin-

cian should evaluate the patient's disease entity as a whole and also the individual symptom reactions. In this way, while keeping the charts in mind, the clinician should be able to predict approximate results in perhaps $\frac{1}{2}$ of the patients, provided the diagnostic and symptom evaluations are correct.

4. When the decision to use the drug has been made, it must be used in an optimum manner. As is true with insulin in diabetes, liver in pernicious anemia, and the antibiotics in infection, a small amount is essentially worthless.

5. However, chlorpromazine is a potent drug and its use should be considered "chlorpromazination," rather than just a routine administration. Chlorpromazine therapy is as sensitive and skilled a procedure as insulin is for the diabetic, anticonvulsives for the epileptic, or digitalis for the cardiac. This is illustrated by experience with the 85 patients who stopped taking chlorpromazine because of the negative psychological response. These patients were chronically ill, fearful, and highly suggestible. Their reactions occurred during the early months of the investigation, and we soon learned that it is necessary to start treatment with small dosages and build up gradually in this type of patient in order to avoid such reactions. Resistance to psychotherapy makes effective use of chlorpromazine all the more important for these patients.

6. Before the therapeutic test is made, the clinician must decide what additional treatment is necessary for the most complete and effective management of the individual problem. In thinking of treatment, the clinician should consider 4 factors: (1) The probable benefit to an individual patient from the drug; (2) the achievement of adequate dosage to initiate treatment, to build up, to reach optimum dosage, and to maintain; (3) the length of treatment probably to be required; (4) the additional treatment necessary for the most effective management in view of the: diagnosis, prognosis, age, resistance, duration of symptoms, intelligence, psychodynamics, ability to communicate, ability to achieve insight.

7. Chlorpromazine therapy should be thought of as either primary or secondary treatment. Primary treatment employs the

drug as the most basic therapy available. Secondary treatment employs it as an ancillary and more symptomatic treatment. Its use in the agitated delusional paretic is secondary to the high-dosage penicillin therapy. In the psychoneuroses this concept is particularly important. Certain types of patients are known to respond well to psychoanalysis or other well-oriented psychotherapies. Use of the drug in these is, of course, secondary, and much can be said concerning this use. In elderly patients or those with low intelligence, with too great resistance, or with inability to communicate verbally, the drug becomes of necessity the primary therapy. In the acute, agitated, unapproachable schizophrenic the use of the drug is primary, unless electroconvulsive therapy is administered.

8. The drug has considerable use as a secondary treatment with psychoanalysis or psychotherapy. However, the more classical psychoanalysts give three objections. They contend first, that partial relief of anxiety will remarkably decrease the motivation for psychotherapy. I do not believe that this is so; however, each case must be individually judged. Good treatment should be motivated by more than anxiety. However, the skilled therapist can adjust the chlorpromazine dosage so that anxiety can be rather accurately regulated. It is ideal to reduce anxiety so that the patient will be able to work in treatment and be able to use ego functions unencumbered, and yet not be so symptom-free that he will not be motivated to continue therapy. If the drug is at least partially successful in this aspect, the patient will certainly proceed in treatment with intensity. In schizophrenia the drug helps foster the therapist as a kind, helpful, giving, parental figure. The second objection, that the patient will regard the medication as the primary treatment and psychotherapy as secondary, is not particularly valid. If the drug is given, the therapist should explain to the patient that it is to be considered something to help temporarily relieve certain symptoms while the main treatment is going on. In fact, most patients in therapy already know this. The third objection, that the drug implies that psychotherapy is not necessary, does not come up, if the explanation is given. Incidentally, the vivid dreams full of emotion

are often helpful in the psychotherapeutic approach.

9. In my original paper I suggested that the drug could be well used by the general practitioner. I now believe that he should treat patients with chlorpromazine only after being certain of the exact diagnosis and being thoroughly familiar with the therapeutic procedure. Better still, the situation should be discussed with a psychiatrist as to diagnosis, prognosis, and treatment of choice. If indicated, a consultation concerning a therapeutic trial should be carried out; this can be done by the practitioner and save referral. If referral is made after this, then the therapeutic trial does not have to be repeated. The greatest tragedy of management by the general practitioner is that many patients will never benefit from a basic psychotherapeutic attitude toward treatment.

10. To achieve optimum chlorpromazine therapy in the psychoneuroses, combined chlorpromazine-well-oriented-psychotherapy should be instituted. Chlorpromazine should not be eliminated but continued indefinitely, according to the patient's clinical status. If withdrawal is necessary, it should be slow, taking a week or more, depending on the level of dosage.

11. Chlorpromazine may be used instead of convulsive therapy in the acute agitated states of schizophrenia, manic-depressive psychosis, or the psychoses of organic origin. It markedly reduces risk, the need for seclusion, and various restraints; and it can frequently be used to care for acute episodes or acute exacerbations at home and save the expense of hospitalization.

12. Chlorpromazine can be used at home for treatment in all except the most extreme situations, and many patients can even remain at their jobs; 40% of patients who would formerly have been hospitalized were treated as outpatients.

13. Pure depressions do not respond to the compound.

14. The relapse rate after withdrawal (Table 4) was considerable: 80% in 6 months. This rate was markedly reduced (in half) if the patients were also being treated by psychotherapy.

15. Maintenance therapy must be continued indefinitely, unless the basic pathol-

ogy is altered. A certain percentage who live successfully and have a real ego-reorganization on this basis can in time be taken off the drug. Slowly diminishing the drug over a few days is suggested after maintaining the patient on it for at least 6 months. If any symptom recurs during dosage reduction, dosage should be returned to its former level. Some patients can be maintained on dosages smaller than the optimum dosage. Trial and careful observation will determine this.

16. Two control studies with phenobarbital prove the marked superiority of chlorpromazine.

17. Control studies showed that a placebo has 35% effectiveness, but this is far short of the 84% effectiveness of chlorpromazine.

18. Undesirable side-reactions do not contraindicate the drug when it is clinically indicated, especially as primary treatment.

19. Suicidal outpatients should certainly be given chlorpromazine instead of the barbiturates, because of the great margin of safety. Suicidal attempts were made by 3 patients who took up to 1,250 mg., with only a 3-day sleep resulting.

20. Since there are available today many dozens of drugs that have a depressing action on the central nervous system, classification of them becomes increasingly difficult. *Ataractic* and *tranquilizer* could essentially be used to describe them all. At the present time our knowledge is probably insufficient to label each group with precise boundaries. Considering its site of action, its chemical structure and character of action, we can describe chlorpromazine as a reticular formation or diencephalic depressant, a phenothiazine derivative, an "ascending depressant," or an indifference-producer.

21. Freud and many others showed that the difference between the "normal" and the neurotic is a quantitative one. Anxiety is certainly an important component of healthy mental functioning and plays an important role in the adjustment of the organism to reality, just as muscle tonus readies the body for physical action. A tranquilizer should not be used unless the anxiety is actually pathologically increased, and the degree of anxiety reduction should be regulated carefully so that the organism will be able to respond in a healthy manner to environ-

mental stimuli, and yet not over-respond abnormally to either exogenous or endogenous stimuli. Let us, as physicians, not take away the already impaired ability of the neurotic to respond to his environment with awareness and effective action.

22. The conversion hysteric and the tranquilized patient have something in common. Whereas the patient with conversion hysteria has "la belle indifference" concerning his paralyzed right arm, the tranquilized patient has a rather generalized indifference. This suggests that the two conditions stand in a relationship which might give us a lead to further understanding of the anatomical-physiological-psychological relationships. The energy of anxiety is certainly combated by the drug; whereas, it is bound or "converted" by the hysterical system.

23. The author feels that a study of a large series of patients is an important and necessary approach to the investigation of drugs. This has been the approach of the investigations up to this time. A really intensive study of a small number of patients also seems important, but no such studies have been reported in the literature. I have studied 6 patients during the course of 200-300 hours of psychotherapy. An investigation of the intra-psychic changes that could possibly be attributed to a drug appears to me to be of real importance. This study is in its preliminary stages and will be published at a later time. The investigation is exceedingly difficult. Tentatively, a reduction in the drive of id impulses and in super-ego rigidity and strictures occurs; with a reduction in the energy of these traditional enemies, the ego has less of a conflict to handle. Therefore, the ego can function more smoothly, coping with reality more effectively.

24. We are dealing with an exceedingly complex arousal mechanism involving anatomically not only the reticular formation, but also a whole interconnecting system of cortical and subcortical structures. This system has to do with the response of the organism to stimuli, both external and internal. It appears that the signs and symptoms of anxiety arise in response to any evidence of threat to continued intactness and feelings of stability and constancy of the organism.

This "anxiety reflex," which probably becomes a conditioned reflex and acts upon the general principles of such a reflex, is probably mediated through part of the reticular activating system. It appears to be one of the deepest, most automatic, and most primitive responses of the organism. A tranquilizer such as chlorpromazine produces a chemical inhibition of the arousal system and of the "anxiety reflex." This theory in no way contradicts psychoanalytic thinking. Threatening internal stress from emotional conflicts between two or more institutions or structural components of the psyche—ego, id, and superego—probably resides in areas of the brain connected to the activating system. If the energy created by such a conflict extends over to the activating system, anx-

iety results, unless it is combatted either by solving and eliminating the emotional conflict psychoanalytically or by chemical action on the structure of the arousal mechanism.

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CHLORPROMAZINE IN THE TREATMENT OF MENTAL ILLNESS. IV: FINAL RESULTS WITH ANALYSIS OF DATA ON 1,523 PATIENTS

HERMAN C. B. DENBER, M.D.,¹ AND ETTA G. BIRD, M.D.²

The introduction of chlorpromazine hydrochloride(1) opened a new era in psychiatry, and recent conferences have reviewed the physiological, pharmacological and therapeutic aspects of this compound(2-7). We have already noted our experiences briefly(8-11), and deal here with the final results and analysis of data from treatment of 1,523 patients between 1 and 15 months.

MATERIALS AND METHODS

Six hundred twenty-two male and 901 female patients, hospitalized for acute and chronic psychoses at Manhattan State Hospital, were treated with chlorpromazine hydrochloride between September 1954 and December 1955. One thousand forty were diagnosed as dementia praecox, while 26 other diagnostic groups were represented (Table 1). Five hundred sixteen (33.9%) were hospitalized for less than 1 year before treatment, 435 (28.6%) from 1 to 5 years, and 572 (37.5%) more than 5 years. The daily average number of patients receiving chlorpromazine between May 23, 1955, and November 30, 1955, was 959.

They were grouped in 3 divisions—138 male and female patients in the reception service, 566 males and 819 females in the respective continued treatment buildings. From April 1 to July 31, 1955, every patient with the exception of those suffering from arteriosclerotic brain disease was treated within 24-48 hours of arrival. Entire wards (70-90 patients) were frequently placed on medication simultaneously in the other buildings. Chlorpromazine was administered 3 times daily either orally, intramuscularly or, rarely, by suppository. It was given in-

	TABLE 1		
	DIAGNOSTIC CATEGORIES—31		
	Male	Female	Total
Dementia Praecox,			
Paranoid	244	427	671
Dementia Praecox,			
Catatonic	75	119	194
Dementia Praecox,			
Hebephrenic	52	54	106
Dementia Praecox, Simple...	15	15	30
Dementia Praecox, Mixed...	15	24	39
Psychosis with Cerebral			
Arteriosclerosis	39	46	85
Psychosis with Syphilis of			
the C. N. S.	59	21	80
Involutional Psychosis,			
Paranoid	9	37	46
Involutional Psychosis,			
Melancholia	9	25	34
Psychosis due to Convulsive			
Disorder	18	22	40
Senile Psychosis	10	24	34
20 Other Groups.....	77	87	164

tramuscularly to severely disturbed and paranoid individuals. In order to prevent pain or abscess formation, hyaluronidase was mixed with the injectable material.

Fifty mg. t.i.d. was administered initially for a 2-week period to all patients. If no result was obtained, 100 mg. t.i.d. was given for 2 additional weeks. When necessary, the dose was increased to 200 mg. t.i.d. or higher, until control was established or the patient considered refractory. The lowest daily dose was 25 mg. and the highest 1,200 mg.; 705 (46.2%) received 300 mg. daily (Table 2).

TABLE 2
DAILY DOSE *

Mg. per day	Male	Female	Total
25-100	10	22	32
125-175	241	139	380
200-250	56	70	126
300	206	499	705
400-500	33	45	78
600	76	102	178
700-750	0	3	3
800	0	1	1
900	0	20	20

* Average daily dose used by all patients.

¹ Director of psychiatric research, Manhattan State Hospital, Ward's Island, New York, N. Y., and instructor in psychiatry, College of Physicians and Surgeons, Columbia University, New York, N. Y.

² Formerly senior psychiatrist, Manhattan State Hospital, Ward's Island, New York, N. Y.

Very disturbed patients received 100 mg. t.i.d. or q.i.d. intramuscularly for 2-5 days and orally afterward. Some were occasionally placed on a 2-3 hour schedule, intramuscular injections alternating with oral medication. The time interval was varied according to the drug's action.

Periodic memoranda were circulated to acquaint the nursing personnel with prodromal signs of various side-reactions. There was a standing order on all treatment wards that chlorpromazine be discontinued when a patient developed pharyngitis with fever, and for an immediate white blood count to be done.

Chlorpromazine was withdrawn when jaundice developed. Appropriate countermeasures were taken for other side-effects. Parkinson symptoms were treated with the addition of either promethazine (20-50 mg. t.i.d.), diethazine (250-500 mg. t.i.d.), or trihexphenidyl hydrochloride (2-4 mg. t.i.d.). Hydrocortone was used for skin rash. The jaundice was treated in 1 patient with ACTH while chlorpromazine was continued. Repetitive epileptic seizures necessitated discontinuation of treatment. Bed rest was ordered for the first 2-5 days when hypotensive symptoms developed. Otherwise, patients were kept ambulatory during the treatment period and encouraged to be active.

Acutely ill recently admitted patients were treated from 1-2 months before the results were assessed. Chronic patients were considered refractory if no result was obtained after 6 to 9 months.

The patients' condition was evaluated by members of the research team and/or ward physicians. Placement on convalescent care status or discharge from the hospital was determined independently by the clinical director. Amelioration of the clinical state was based on changes in either all or any of the following: (1) emotional reactions, (2) ideational content, (3) interpersonal relatedness on the ward. Four categories were used to classify the patients at the end of treatment: (1) convalescent care status or discharge, (2) much improved, (3) improved, (4) no change.

A patient was considered to be improved if there was a decrease in a significant num-

ber of the following: Tension, anxiety, uneasiness, restlessness, impulsiveness, agitation, combativeness, destructiveness, delusions, hallucinations or other abnormal mental trends. For example, a patient who had been in restraint for intermittent periods during several years and was now quiet, cooperative, and taking part in ward routine would be considered improved. His condition would be much improved if he gave no evidence of abnormal mental trends, had adequate and appropriate emotional responses, and was able to relate to the ward group.

RESULTS

Acutely ill patients usually responded rapidly to chlorpromazine, particularly when begun with intramuscular injections. Lethargy was noted frequently after an injection of 100 mg. The patient stopped molesting others, did not rush about the ward, no longer shouted or screamed, and did not inflict bodily injury on himself or others. A state of lassitude developed after 48-72 hours. While appearing drowsy, the patient answered questions immediately and was alert during the time. As the emotional drive abated, the pathologic thinking process underwent change. Afterward there was a resynthesis of feeling and thought, and the patient began to speak of his "breakdown" or "illness."

The response in chronically ill patients was slower. They became disinterested in their persecutors. "Voices" or "visions" that had been a source of torment for years were felt to exist no longer. At other times patients would say, "I hear them but they don't bother me anymore." Bizarre feelings were normalized. Mute patients began to speak. Interest was shown in the surroundings. Detachment and isolation were steadily replaced by group activities. Some who had been treated unsuccessfully with ECT, insulin coma or lobotomy, and who had been in continuous restraint or seclusion for long periods eventually were able to leave the hospital.

It was not possible to make a more detailed study of the various psychopathological changes in view of the large number of

patients under observation. The results in patients with depression have been reported elsewhere(10).

Dose.—One thousand two hundred forty-three (81.6%) patients were treated with 300 mg. of chlorpromazine or less per day (Table 2); 25-250 mg. daily were given to 49.3% of male patients and 25.6% of female patients. The preponderance of patients in the lower dose range were male. This was particularly evident in the depressed group, where 7 of 9 male patients were treated with less than 250 mg. daily, while 22 of 36 females used 300 mg. or more. The patients who showed the best results required the lower doses of chlorpromazine, while the more seriously ill received the higher amounts. It seemed, however, that if control was not established with 600-900 mg. daily, additional amounts up to 1,200 mg. did not materially influence the result.

Side-effects.—Six major reactions occurred (Table 3). The Parkinson symptoms resembled the classical neurological disease with muscular rigidity, flexion of the forearms, shuffling gait, frozen facies, tremor and drooling. They varied from patient to patient in degree or intensity but were never severe and always reversible. Their frequency was highest between the first to sixth months of treatment, and were unrelated to the higher dose. Fifty-six patients were receiving 300 mg. daily, and 36 were taking 600 mg. daily at the time the Parkinson symptoms developed (Table 4). The addition of either diethazine, promethazine hydrochloride or trihexphenidyl hydrochloride decreased or abolished the syndrome during the concomitant administration of chlorpromazine.

The skin rash was macular, papular, pruriginous, covering hands and face or generalized. Twenty-nine patients showed this symptom within 1 month of treatment, 19

between 1 and 2 months, 12 between 2 and 4 months, and the rest between 5 and 10 months. When the rash developed, 26 patients were receiving 150 mg. daily, 1 was receiving 250 mg., 39 were receiving 300 mg., 4 were receiving 600 mg., and 1 was receiving 750 mg. The rash responded rapidly to hydrocortone, frequently clearing within 24 hours. Some patients developed a second rash and chlorpromazine was discontinued.

The cardiovascular effects consisted of mild to severe tachycardia and/or hypotension. Fainting occurred occasionally at the onset of treatment, but very infrequently after the first 10 days.

Jaundice was observed in 9 patients within 1 month of treatment, in an equal number between 1 and 2 months, and in 1 patient between 2 and 3 months. At the time of occurrence, 6 patients were receiving 150 mg. daily, 12 were receiving 300 mg. daily, and 1 was on 600 mg. daily. Jaundice was of the obstructive type, self-limiting in duration, although some cases were not symptom free until 3 months had elapsed(9). The patient treated with ACTH seemed to show a more rapid remission of her icterus.

The convulsions were of the grand mal type and were observed early during treatment. Their frequency in epileptic patients showed little to no variation with chlorpromazine. Anticonvulsant drugs were always continued at the regular dose for each patient. The menstrual cycle was often disturbed with either menorrhagia or amenorrhea. Exact data on their incidence was not obtained. Only 2 cases of leukopenia were observed. There were no cases of agranulocytosis.

TABLE 4
PARKINSON SYMPTOMS—117 PATIENTS { 107 Female
10 Male

Months of treatment	Total
0-1	8
1-2	15
2-3	18
3-4	17
4-5	26
5-6	17
6-7	3
7-8	8
8-9	2
9-10	1
10-11	1
11-12	1

TABLE 3

SIDE-EFFECTS

	Male	Female	Total	
Parkinson	10	107	117	(7.6%)
Skin Rash	21	50	71	(4.6%)
CV Effects	13	15	28	(1.8%)
Edema of				
Face & Ankles.	5	22	27	(1.7%)
Jaundice	2	17	19	(1.2%)
Convulsions	11	6	17	(1.1%)

TABLE 5

RESULTS

	Male	Female	Total
Convalescent Care or Discharge	103	229	332
Much Improved	56	39	95
Improved	277	543	820
No Change	181	83	264
Died	5	7	12

Minor side-effects were noted, such as abdominal cramps, epistaxis, anemia, diarrhea, constipation, hyperpyrexia, seborrhea, lactation, dryness of the mouth and stuffiness of the nose.

Clinical.—Three hundred thirty-two (21.8%) patients were placed on convalescent care or discharged from the hospital; 237 of these had been hospitalized 1 year or less before treatment; 47 had been ill 1 to 3 years; 26 from 3 to 5 years; 19 from 5 to 10 years; and 3 more than 10 years. Ninety-five (6.2%) were considered much improved; 820 (53.8%) improved; and 264 (17.3%) unchanged (Table 5). There were no deaths due to drug toxicity. One hundred sixty-nine (72.5%) of patients ill more than 10 years were improved following treatment (Table 6). One patient hospitalized for 30 years was placed on convalescent care after 14 months of chlorpromazine treatment.

General.—The data on relapse following withdrawal of chlorpromazine have already been described(9). Those patients ill the longest before treatment was begun relapsed rapidly after withdrawal of the drug.

The number of restraints has fallen sharply and on many wards this practice has been abandoned. Seclusion is rarely used. Accidents involving patients as well as assaults on personnel have significantly decreased. Destruction of clothes, furniture, windows and other material has almost ceased. It has been necessary to expand occupational

therapy. Recreational and music therapies have been made available to many more patients. They ask to discuss their problems with "somebody." The group and individual psychotherapy programs have been expanded.

DISCUSSION

There has been much controversy regarding the dose of chlorpromazine with 300 to 4,000 mg. daily being advocated(3). It is not generally known that cultural factors influence this level(5). The English as a rule use no more than 400 mg. daily, while French, Swiss and American patients receive up to 1,000 mg. and more per day(12). Three hundred mg. daily was capable of producing a successful clinical result in our series. Women required higher doses than men. The bulk of male patients received less than 300 mg. daily, while female patients took 300 mg. or more (Fig. 1).

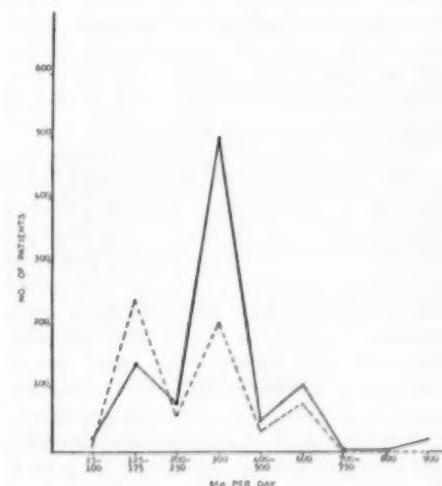


FIG. 1

TABLE 6

ALL PATIENTS

Duration of hospital before treatment	Convalescent care or discharge	Much improved	Improved	No change	Died
To 1 year	237	25	160	87	7
1-3 years	47	22	118	45	1
3-5 years	26	17	126	33	0
5-10 years	19	22	247	49	2
>10 years	3	9	169	50	2

Patients who responded rapidly to chlorpromazine usually did so with 300 mg. or less. The dose should be rapidly increased to at least 1,000 mg. daily if no clinical result is observed in chronic patients within 1-2 months. It is possible that better results might have been achieved in resistant patients had we followed this procedure. We must emphasize the need to treat chronic psychotic patients for extended periods (9-12 months) before assessing the result. Insufficient treatment at ineffective doses have undoubtedly been the cause of many therapeutic failures(13).

The improvement rate for all categories of patients was 81.8%. The total number placed on convalescent care status or discharged decreased rapidly after the first year of hospitalization. The inverse relationship of duration of illness and therapeutic effect holds true for chlorpromazine. Patients ill the longest show the poorest discharge rates. There was no relationship between diagnostic group and result. A patient may show features of catatonic, hebephrenic, or paranoid schizophrenia during one or subsequent hospitalizations. This makes correlation of diagnosis and clinical result difficult and even questionable.

The incidence of Parkinson symptoms, jaundice, and skin rash was strikingly more frequent in female than in male patients. Szatmari(14) and Ayd(15) have reported that skin rash among their patients was present "only in females." Goldman(16) noted that 3 patients with agranulocytosis were females. Lomas(17) found that jaundice, skin rash and edema were most prevalent among females. Stacey and collaborators(18) found 6 of 8 cases with jaundice to be females. Isaacs *et al.* stated that jaundice was more common in females, 2 or 3 to 1. They said, "The sex incidence of this complication also awaits an explanation"(19).

Jaundice has been attributed to alterations of the bile with increased viscosity leading to "intrahepatic bile stasis"(20). Almaden and Ross(21) attributed methyl testosterone jaundice to a similar cause. The histopathological picture of chlorpromazine jaundice is analogous to that found with a wide variety of drugs(22). This still does not explain the striking preponderance of fe-

males with this symptom. The incidence of jaundice varies from country to country, with the French reporting the lowest rate(12).

It is fairly certain now that jaundice occurs with increasing frequency from the second to eighth week of treatment and rarely thereafter(18, 23). When large numbers of our patients were placed on treatment simultaneously, it appeared as if the rate of jaundice was high. For this reason, infectious hepatitis was implicated. The use of this word is misleading(24), for pathologic studies show no signs of inflammatory changes in the liver parenchyma(20). Once the initial group is under treatment for several months, the morbidity suddenly declines. This results from the diminished rate of new patients admitted to treatment. One case of jaundice appeared in the 5 months preceding termination of this study.

Jaundice has been treated for the most part by cessation of chemotherapy. Labhardt(25) used chologogues in an effort to increase the flow of bile. Although our case of jaundice treated with ACTH seemed to show a much more favorable response, it is not possible at present to draw any conclusions(20).

Side-effects and toxic reactions have not been studied in relation to their real importance(11). One can draw deductions of theoretical interest from their occurrence. It has been stated that patients should be pushed to a toxic level before lowering the dose, and that a good clinical result is related to these symptoms(4, 6). The relation of improvement to occurrence of Parkinson symptoms was discussed recently, but no clear-cut opinion was established(4, 6). Hewat *et al.* stated that "this action (Parkinsonism) may have therapeutic significance"(26). A study of chlorpromazine-diethazine in the treatment of depression demonstrated clearly that clinical improvement did not take place unless physiological symptoms developed(27). This problem requires further study. Our tentative belief at present is that pharmacologic compounds without side-effects are clinically ineffective.

Chronically ill patients who relapse following withdrawal of chlorpromazine are usually those with lengthy hospitalizations be-

fore treatment. It would, therefore, seem logical that such patients be on medication for the duration of their hospital stay. It is essential to be aware that control is extremely difficult to establish once the drug is withdrawn and relapse occurs.

We did not combine chlorpromazine with ECT, but used the former in combination with diethazine for depression with promising results(27). Analysis of our data has shown that chlorpromazine alone can favorably influence depression(10). Baruk *et al.*(28) were able to discharge 7 of 13 longstanding cases of melancholia after treatment with chlorpromazine. However, chemotherapy of depression is still a controversial issue.

The mass application of chlorpromazine with as many as 1,000 patients on treatment at any one time has led to an extraordinary transformation of this hospital unmatched in its existence. At the time of this writing (July 1956), 22 months after the program began, the positive results outlined in this paper are still maintained. Other therapeutic methods, such as electroshock, insulin coma, lobotomy, etc., have not been as successful. "Back wards" no longer exist. These buildings are quiet, clean, with flower pots, curtains and new furniture decorating the rooms. Patients resident in former "maximum security" wards now attend ball games and picnics.

Chlorpromazine does not protect against relapse if discontinued after discharge. Preliminary studies of patients returned from convalescent care status show they must be followed closely after leaving(29, 30). Relapse may take place within a short time unless the maintenance dose is accurately regulated. Not only should the psychophysiological aspects be considered, but the innumerable social factors as well(31). Our observations indicate that patients with repeated psychotic attacks should be on a maintenance dose of chlorpromazine for extended periods.

Three salient features emerge from this study: (1) The average dose used by females exceeded that of males. (2) The incidence of side-reactions was greater in females. (3) The clinical results in female patients were superior. After 50-55 years the

percentage improvement of female patients begins to decline, while that of males increases. This material is now being analyzed further.

It would seem that a hormonal factor is operative in the psychosis. The structural formulae of male and female hormones, as well as that of the adrenal cortex, show a common steroid configuration, of which cholesterol is considered to be the precursor. One of the main sites of cholesterol metabolism is the liver. It is possible that a metabolic defect of this organ may exist in mental illness. The relationship of the liver to psychotic disorders has been claimed for many years(32). Rinkel has briefly reviewed some of the evidence for liver involvement in experimental psychiatric procedures(33). While most of our attention in psychiatry has been concentrated on the brain, it is indeed possible that the primary disturbance lies in other organ systems, and the central nervous system involved secondarily.

SUMMARY AND CONCLUSIONS

1. Of 1,523 patients treated with chlorpromazine from 1-15 months, 81.8% showed improvement.
2. Problems concerning dose, side-effects, and clinical results have been considered.
3. Female patients used higher doses, had a proportionately larger number of side-effects, and showed a better discharge rate than males.
4. Some theoretical considerations of these findings have been reviewed.

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CLINICAL EVALUATION OF TWO PHENOTHIAZINE COMPOUNDS PROMAZINE AND MEPАЗINE¹

L. H. RUDY, M.D., H. E. HIMWICH, M.D., AND D. C. TASHER, M.D.²

Because of the continued research for more effective tranquilizing drugs, two phenothiazine compounds were evaluated clinically and the results compared with chlorpromazine on the same group of chronic patients. One of these, mepazine (Pacatal) had been used successfully in Europe. Promazine (Sparine) is now under investigation at another hospital and has been found to be effective in the management of patients with acute mental disturbances (1). This report is concerned with the effects of mepazine and promazine on the same groups of acute and chronic patients. The chronic patients had a previous therapeutic trial on azacyclonol (Frenquel), chlorpromazine (Thorazine) and reserpine (Serpasil) (2). In view of the turnover of the acute patients, a comparative study could not be done in this category.

METHOD

The study of the acute patients was made at the East Moline State Hospital by one of us (D.C.T.). Fifteen acute patients (8 men, 21-53 years of age, and 7 women, 26-51 years of age) were given these drugs. In addition, approximately 50 chronically ill psychotic patients, almost equally divided according to sex, were tested; the majority were between 40-70 years of age with long histories of residence averaging 19 years in state hospitals. All the chronic patients were sufficiently disturbed to require closed ward therapy and maximum hospital security. The schedule of oral medication was an initial placebo period of 2 weeks followed by 4 weeks of one of these drugs, then a placebo period before the alternate one was employed.

Acute Patients.—This group of 15 patients with acute psychotic episodes were all recently admitted to the hospital and had not yet received any therapy other than isolation and hydrotherapy as necessary; 3 had required intramuscular Sodium Amytal. Among the 8 men were 3 patients with acute exacerbations of chronic undifferentiated schizophrenia; 2 who were classified as having an initial attack of undifferentiated schizophrenia; and 3 paranoid schizophrenics. Of the female patients (26 to 51 years of age), 3 had acute exacerbations of chronic undifferentiated schizophrenia; 1 had been initially diagnosed as an acute undifferentiated schizophrenic; 2 were paranoid schizophrenics; and 1 was diagnosed as a severe acute anxiety reaction. The patients were first given 4 weeks of treatment with promazine starting with a test dose of 25 mg.; this was increased to 50 mg. t.i.d. the second day and 100 mg. q.i.d. following that. All medication was by the oral route. Pulse and blood pressure were taken daily and the patients seen twice daily by the medical staff. With mepazine, dosage levels of 25 mg. t.i.d. were used as a test dose; this was increased to 50 mg. t.i.d. the second day and 100 mg. q.i.d. following that. These patients were kept on the ward for at least 2 weeks after starting therapy, and if they become stabilized without any manifest untoward effects, they were permitted to go off the ward to recreational therapy, visit with relatives, and participate in hospital activities.

The criteria used for these patients are as follows: (1) Recovery: indicates social recovery so that the patient is ready to take his place in society again; complete loss of hallucination and delusions, return of affect and disappearance of abnormal behavior; (2) Great Improvement: signifies one or more of the following 3 changes: (a) loss of hallucinations, (b) marked improvement in interpersonal relationships, (c) marked improvement in affect; these patients were given a parole card and/or transferred from

¹ Read at the 112th annual meeting of The American Psychiatric Association, Chicago, Ill., April 30-May 4, 1956.

² From the Galesburg State Research Hospital, Galesburg, Ill., and East Moline State Hospital, East Moline, Ill.

an untidy ward to a tidy one and continued to improve without further medication; (3) Improved: includes all the criteria for Great Improvement except that these improvements were temporary and ceased when medication was withdrawn. Some of the patients were unchanged by medication, as indicated in Table 1, and none was made worse.

Chronic Patients.—The criteria for clinical evaluation of the chronic patients at the Galesburg State Research Hospital (by L.H.R. and H.E.H.) were the same as those previously used for the study of other tranquilizing drugs on this group of patients (2). The results obtained with promazine and mepazine were classified at various de-

grees of improvement, unchanged condition, or worse. The term improvement was applied to beneficial change in the psychotic symptoms that appeared while the drug was being administered and then disappeared with regression toward the premedication state after discontinuation of the drug. The degrees of improvement were: (1) Marked improvement—an over-all amelioration of the fundamental psychiatric symptoms, such as the delusional thought process of the paranoid patients, the dissociation of ideas and the autism characteristic of the hebephrenic; (2) Definite improvement—a change of the psychotic picture including an attenuation of all psychotic symptoms, but referring chiefly to the secondary ones, such as diminution of psychomotor hyperactivity; (3) Partial improvement—desirable effects limited to the mitigation of only some of the psychotic symptoms so that ward management was greatly facilitated; (4) Doubtful improvement—some beneficial effects noted but the patient did not fulfill both requirements mentioned above in regard to the correlation of the patient status with administration or removal of the therapeutic agent, so that it remained doubtful whether the amelioration was actually due to the drug or to a spontaneous fluctuation in the psychotic symptomatology; (5) the category of equivocal results was necessary in order to classify changes consisting of a sedative or quieting effect which might be considered beneficial from the viewpoint of ward management but hardly so from the psychiatric viewpoint as these changes were associated with intensification of withdrawal, apathy, passivity, and inactivity; (6) this category, patients who remained unchanged, is self-explanatory, as is (7) those who were made worse.

TABLE 1

THE EFFECTS OF PROMAZINE AND MEPAZINE ON A GROUP OF ACUTE PATIENTS

	ACUTE UNDIFFERENTIATED		ACUTE EXACERBATION OF CHRONIC UNDIFF.		TOTAL
	PARANOID	PSYCHONEUROTIC ANXIETY	PROMAZINE	MEN	
Recovered	1	1	1	0	3
Great improvement ..	1	1	1	0	3
Improved	0	1	0	0	1
Unchanged	0	0	1	0	1
Total	2	3	3	0	8
	WOMEN		MEPAZINE		
Recovered	1	1	0	0	2
Great improvement ..	0	1	1	0	2
Improved	0	1	1	1	3
Unchanged	0	0	0	0	0
Total	1	3	2	1	7
	MEPAZINE		RESULTS		
Recovered	0	1	1	0	2
Great improvement ..	1	1	0	0	2
Improved	0	0	0	0	0
Unchanged	0	0	1	0	1
Total	1	2	2	0	5
	WOMEN		ACUTE PSYCHOTIC EPISODES		
Recovered	0	0	0	0	0
Great improvement ..	1	0	0	0	1
Improved	0	0	1	0	1
Unchanged	0	1	1	0	2
Total	1	1	2	0	4

RESULTS

Acute Psychotic Episodes.—Eight men were placed on a 4-week period of promazine therapy (Table 1). Three were clinically recovered and sent home on conditional discharges. One was an acute undifferentiated schizophrenic, another a paranoid schizophrenic, and the third an acute exacerbation. Three others exhibited great improvement in that they ceased to hallucinate or to be disturbed so that special nursing care and hy-

drotherapy could be discontinued at the end of 2 to 3 weeks. One of the acute exacerbations of the chronically undifferentiated schizophrenics revealed improvement and exhibited resocialization, enhanced interpersonal relationships and better ward adjustments. He was distinctly less aggressive and able to take part in the total hospital treatment without showing any evidence of drowsiness. One paranoid patient was unchanged following the course of therapy.

Seven women also received promazine and were included in the acute group having been admitted to the hospital within the preceding 4 weeks. One acute undifferentiated schizophrenic patient and another with acute exacerbation were considered clinically recovered and discharged from the hospital. One patient with acute exacerbation and one paranoid were greatly improved and no longer required closed-ward management. Of the other patients, 1 with psychoneurotic anxiety, another with acute exacerbation, and a third with a paranoid reaction showed improvement. All were able to tolerate this dosage of promazine and the only side-effect noticed in the 15 patients was constipation which was easily corrected by cascara or milk of magnesia.

Only 10 of the acute patients were given mepazine therapy inasmuch as 5 had previ-

ously been discharged. One, a paranoid schizophrenic, and another with an acute exacerbation, were regarded as social recoveries. Great improvement was obtained in 1 male with acute exacerbation and with 1 male and 1 female with acute undifferentiated schizophrenia. One paranoid was improved, 2 paranoid and 1 female with an acute exacerbation were unchanged. Of the 10 patients receiving mepazine, drug intolerance was noted in 2 cases diagnosed as drug dermatitis. There was slight elevation of the pulse with moderate fall in blood pressure. The treatment of 1 patient was discontinued because of dizziness; she is not included in Table 1.

Chronic Patients.—In Table 2 it should be noted that of the 50 patients treated with mepazine, 50% showed marked, definite, or partial improvement; and of these 25 patients 3 manifested marked improvement, i.e., only 6% of the total number of chronic patients under treatment with this drug. Six other patients or a total of 12% manifested exacerbation of their psychotic behavior and were termed worse. The side-reactions were as follows: constipation(4), dizziness(4), dry mouth(3), dermatitis(1). Two displayed general tremulousness when the dosage was raised to 100 mg. t.i.d.

A review of Table 2 discloses that of the

TABLE 2
THE EFFECTS OF PROMAZINE AND MEPAZINE ON A GROUP OF CHRONIC PATIENTS

	Senile psychosis	Paranoid	Hebephrenic	Catatonic	Simple	CNS syphilis	Schizoaffective	Total
PROMAZINE								
Marked improvement	2	4	1	0	0	0	0	7
Definite improvement	0	4	4	0	1	1	6	16
Partial improvement	2	5	4	0	1	2	0	14
Doubtful improvement	2	2	1	0	1	0	0	6
Equivocal results	0	0	3	1	0	0	0	4
Unchanged	3	0	2	0	0	0	0	5
Worse	0	0	0	0	0	0	0	0
Total	9	15	15	1	3	3	6	52
MEPAZINE								
Marked improvement	0	2	0	0	1	0	0	3
Definite improvement	3	4	4	0	0	2	0	13
Partial improvement	0	3	3	0	1	0	2	9
Doubtful improvement	1	1	0	0	0	0	0	2
Equivocal results	1	0	3	0	0	0	0	4
Unchanged	1	3	5	0	0	0	4	13
Worse	1	1	1	1	1	0	1	6
Total	7	14	16	1	3	2	7	50

52 patients treated with promazine, 37, or 62%, exhibited marked, definite, or partial improvement. In these 37 patients, 7, or 13% of the total number of patients treated, displayed marked improvement. None became worse. The following side-effects were noted: constipation(4), dry mouth(3); 1 patient became dizzy with a dose of 100 mg. t.i.d.; and 1 developed a Parkinsonian tremor of the hands on a dosage of 200 mg. q.i.d.

DISCUSSION

Two phenothiazine compounds were tested clinically on acute and chronically disturbed psychotic patients. It was not possible to evaluate these drugs with chlorpromazine on the acute psychotics because of patient turnover. Both mepazine and promazine appeared to be effective although under promazine therapy a greater number of patients showed improvements and fewer side-effects than with mepazine. On the other hand, patients who exhibited social recovery with mepazine failed to do so with promazine. As might have been expected, the results obtained on the acute patients were better than those on the chronically ill. Improvement in the acute category was equivalent to marked improvement in the chronic group.

A review of Table 3 reveals that the percentage of patients showing marked, definite and partial improvement was greatest with promazine and least with mepazine. On the other hand, when the best type of improvement is taken into consideration, chlorpromazine is most effective, followed by promazine and then mepazine. In general, it may be said that chlorpromazine more consistently caused complications than did the 2 other phenothiazine derivatives. With chlorpromazine were observed decreases of blood pressure of rapid onset, greater variability and instability with occasional depressions to extreme low values affecting especially the diastolic levels. These hypotensive crises were

often associated with spells of dizziness and fainting. Chlorpromazine also produced a variable tachycardia. In addition, skin erythema and urticaria were observed and one patient developed icterus. However, chlorpromazine was the most effective drug in treatment of the disturbed patient.

With promazine 2 patients who had been previously seizure-free had grand mal seizures, one convulsing on a dosage of 100 mg. q.i.d. and the other on 400 mg. q.i.d. However, in both there was a suggestion of previous brain damage—one has been diagnosed luetic meningo-encephalitis and the other mental deficiency. In a previous paper(7), it was noted that patients with organic brain disease were susceptible to high doses of the phenothiazine compounds and that perhaps the threshold of cerebral discharge may be lowered by brain injury and, therefore, make the patient unduly sensitive to the tranquilizing drugs. In evaluating the side-effects, it must be recalled that the actual dosage of promazine was greater than that of the other two drugs. Nevertheless, the side-effects of mepazine and promazine were less prominent than those of chlorpromazine. Such high dosage may be responsible for the large percentage of various degrees of improvement as well as for the untoward effects of Parkinsonism and grand mal seizures.

It is known that chlorpromazine depresses hypothalamic functions and this depression may in part account for the clinical improvement of disturbed patients(3). Mepazine and promazine also exert effects on hypothalamic structures. Another locus of the activity of chlorpromazine is found in the reticular system. Chlorpromazine may depress this system and thus alter the reaction to painful stimuli(4). It is therefore of interest to note that promazine, like chlorpromazine, also effectively blocks the arousal reaction of the reticular formation to pain(5, 6), while mepazine fails to do so. Perhaps

TABLE 3

EFFECTS OF CHLORPROMAZINE, PROMAZINE AND MEPAZINE ON CHRONIC PATIENTS

	Number of patients treated	Marked improvements	Definite & partial improved	Total improved	Unchanged	Worse
Chlorpromazine	38	9 (24%)	15 (39%)	24 (63%)	13 (34%)	1 (3%)
Mepazine	50	3 (6%)	22 (44%)	25 (50%)	19 (38%)	6 (12%)
Promazine	52	7 (13%)	30 (58%)	37 (71%)	15 (29%)	0

this failure may be partially responsible for its less effective clinical action.

CONCLUSIONS

We found promazine and mepazine to be of value in the treatment of psychotic patients with acute and chronic symptomatology. In the acute patients both promazine and mepazine yielded social recoveries as well as lesser degrees of improvement. One patient in 15 remained unchanged with promazine as did 2 in 10 with mepazine. Of the chronic patients 50% of those on mepazine revealed various grades of improvement, while 71% exhibited similar improvements with promazine. The best type of marked improvement was shown in 3 patients (6%) with mepazine, 7 (13%) with promazine, and 9 (24%) with chlorpromazine. Side-reactions with mepazine were constipation, dizziness, dry mouth, and dermatitis. In some instances the use of promazine was associated with constipation, dry mouth, dizziness, and Parkinsonian tremor. Two patients exhibited grand mal seizures. In general, for the chronic patients, the dosage employed with promazine was greater than that used with mepazine.

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AN EVALUATION OF PROMAZINE HYDROCHLORIDE IN PSYCHIATRIC PRACTICE¹

STANLEY LESSE, M.D.²

This paper represents our initial clinical evaluation of a new synthetic phenothiazine derivative in psychiatric practice: promazine hydrochloride, a gamma-dimethylamino-n-propylphenothiazine hydrochloride. Its formula is very similar to those of the other 2 phenothiazine compounds that have been intensively tested in psychiatric patients; namely, phenergan hydrochloride and chlorpromazine hydrochloride. Promazine hydrochloride differs chemically from chlorpromazine hydrochloride only in that the latter has a chlorine atom attached to the phenothiazine nucleus.

Promazine hydrochloride was studied in our search for an ataractic drug which would be equal or superior to chlorpromazine as a tranquilizer in psychiatric patients, while at the same time having fewer adverse side-effects.

METHODOLOGY

The case material consists of 50 patients, 45 of whom were seen in private practice, and 5 were clinic outpatients. Thirty-six were women ranging in age from 28 to 75 years, while 14 were males 35 to 72 years of age. As to diagnoses, 22 had schizophrenia, 15 had agitated depressions, 11 had psychoneuroses, and 2 severe, acute organic mental reactions. The duration of illness varied from 20 hours to 21 years, the vast majority being less than 4 months. All patients were treated with promazine hydrochloride for more than 2 weeks. The longest period of treatment has been 4 months. The majority of patients had had therapy with other ataractic drugs prior to starting on promazine.

TECHNIQUE OF EVALUATION OF IMPROVEMENT LEVEL

The technique used in evaluating the level of improvement was the same as that intro-

duced by us in our initial evaluation of the efficacy of chlorpromazine therapy in private practice (1). It considers and attempts to quantify, as much as possible, both subjective and objective factors. The criteria used stress the patient's adaptation to routine responsibilities of everyday life in addition to the degree of symptomatic improvement. The degree of pride and pleasure obtained from successful performance was considered also. The details of the scheme are as follows:

I. *Performance*.—(A) Vocational Performance—Key: (1) *Excellent*: full-time employment. Functioning efficiently without strain. Great pride and pleasure from attainments. (2) *Good*: full-time employment. Greater effort required than was necessary prior to illness. Moderate pride and pleasure from attainments. (3) *Fair*: working intermittently with considerable difficulties, frequent absences. Faulty performance at times. Lack of pride and pleasure. (4) *Poor*: unable to perform at all. (B) Social Performance (Individual and Group Interpersonal Relationships)—(1) *Excellent*: active and comfortable. High level of pride and pleasure obtained. (2) *Good*: active but with slight to moderate difficulty at times. Limited pleasure capacity. (3) *Fair*: socializes with great difficulty. Readily becomes very anxious. Lack of pride and very limited and infrequent pleasure. (4) *Poor*: seclusiveness or chaotic relations.

II. *Amelioration of Anxiety*.—Anxiety is defined for our purpose here in its broadest aspect. We consider it synonymous with fear whether this fear is generated by unconscious conflict or actual difficulties. We attempted to quantify anxiety according to a 4-point scale after analyzing this psychophysiological phenomenon into several components; namely, (1) motor component, (2) affectual component, (3) verbal component, and (4) autonomic component. Key: (1) *Calm*: no restlessness. Overt expression of fear, when it occurs, is appropriate to the severity of the actual stress. (2) *Slight restlessness*: slight affectual expression of fear, slight pressure

¹ The promazine hydrochloride was generously supplied as WY-1094 (Sparine) by the Wyeth Laboratories, Philadelphia, Pa.

² From the Neurological Institute of the Presbyterian Hospital of New York and the College of Physicians and Surgeons, Columbia University, New York, N. Y.

of speech. (3) *Marked restlessness*: pacing. Marked overt affectual expression of fear. Often severe pressure of speech. (4) *Panic*.

III. Amelioration of Initial Symptoms.—Key: (1) *Excellent*: all symptoms completely gone. (2) *Good*: symptoms markedly reduced in intensity and frequency. Patient able to cope with them. (3) *Fair*: slight improvement only, with the symptoms continuing to plague patient most of the time and with marked impact. (4) *Poor*: symptoms unchanged.

IV. Dreams.—Whenever possible, dreams were sought out and studied in an attempt to gain additional information. Disappearance of nightmares, decrease in the frequency of rage dreams, and an increase in the frequency of pleasant dreams were points that were evaluated.

The final Improvement Rating was indicated on a 4-point scale which took into account all of the factors described above. Key: (1) I. *Excellent*: full-time efficient employment. Active and comfortable in social performance. Marked pride and pleasure from vocational and social performance. (2) II. *Good*: full-time employment but requiring slightly greater effort than usual. Active socially but with slight to moderate difficulties at times. Slight residual anxiety. Symptoms markedly reduced in intensity and frequency. Limited pride and pleasure from performance. (3) III. *Fair*: working but with considerable difficulties. Frequent absences. Socializing with great difficulty. Moderate to marked residual anxiety. Slight improvement in symptoms. Minimal pride and pleasure from performance. (4) IV. *Poor*: unable to perform vocationally or socially. Anxiety level severe and unchanged. Symptoms unchanged. Absence of pride and pleasure from performance.

Of the 50 patients, 44 were too ill to function socially or vocationally, being completely dominated by their symptoms. The other 6 functioned, but only with very great difficulties.

CLINICAL EVALUATION OF PROMAZINE HYDROCHLORIDE

Improvement.—Of the 50 patients studied 17 (34%) were considered as presenting excellent or good results (Improvement Rat-

ings I or II). The remaining group obtained very slight benefit or none at all. In other words, the drug worked effectively in approximately one-third of the cases, while it had very slight or no effect in the remaining two-thirds.

Factors Affecting Degree of Improvement.—As with chlorpromazine, age, sex, and diagnosis did not significantly affect the improvement ratings. The factor upon which the degree of improvement appears to rest is the degree of overtly manifested anxiety. Promazine hydrochloride was most effective in patients with marked anxiety, particularly those in whom there was a great deal of motor activity as part of the anxiety. Figure 1 illustrates the relationship between the degree of anxiety and the improvement rating. Note that only 1 patient with relatively slight overtly manifested anxiety showed a significant improvement.

It is my impression also that the drug is more effective in acutely ill patients than in those who have been ill for 6 months or more.

Technique of Drug Administration.—Dosages with promazine hydrochloride were similar to those used with chlorpromazine hydrochloride. The initial daily dose ranged from 50 mg. to 600 mg. per day (average 100 mg.). I have given initial daily doses of 400-600 mg. to patients who were on corresponding doses of chlorpromazine and in whom the chlorpromazine had to be discontinued because of a severe side-effect. This change-over was made without any observable difficulty. In severely agitated patients the initial daily dosage was as high as 400 mg. per day. I have used promazine intramuscu-

ANXIETY AS A FACTOR
EFFECTING DEGREE OF IMPROVEMENT

D E A G R E E I O F	IMPROVEMENT RATINGS			
	I	II	III	IV
1	0	0	1	4
2	0	1	4	5
3	0	12	12	4
4	2	2	1	2
TOTALS	2	15	18	15

FIG. 1.

larly in only 4 patients who manifested extreme anxiety, the maximum dose being 400 mg. spread over 24 hours. The intramuscular promazine appears to be far less painful than the parenteral chlorpromazine. It took effect, in the 3 patients in whom it was very efficacious, in from 15 to 30 minutes, which is about the same as I have found with intramuscular chlorpromazine. As yet I have had no experience administering the drug intravenously. The majority of patients report that promazine taken orally begins to take effect in from 45-60 minutes.

The maximum dose of promazine used was 1,000 mg. per day. It is my impression, however, that if the drug does not have very significant benefits by the time 500-600 mg. per day are used, it will be of no use at higher dosages. However, as with chlorpromazine, if the patient shows definite symptoms and signs of improvement before he has received 500-600 mg. per day, the drug should be increased until maximal benefits are obtained. The maximum dosages were maintained for 2 weeks or longer. They were not decreased until there was definite evidence that the patient had maintained a high level of improvement for several weeks.

The medication was a valuable adjunct to either supportive or analytical psychotherapy, but only in those patients who initially were very tense. These patients at the onset were poor candidates for any type of psychotherapy given on an outpatient basis. The amelioration of the marked anxiety enabled many in this group to cooperate in psychotherapy.

Complications of Promazine Therapy.—We have found that over 50% of patients treated with chlorpromazine had adverse side-effects (1); in 1 of every 8 chlorpromazine was discontinued because of their severity.

We found that promazine had far fewer side-effects than chlorpromazine, and when present, with 3 exceptions, they were very mild and caused no great difficulties. Mild drowsiness or fatigue and dryness of the oral and nasal mucosa were the only symptoms commonly seen. Of the 14 patients complaining of drowsiness only 6 required amphetamines to counteract the symptom. Slight dryness of the oral and nasal tissues was reported by 9 patients. Hypotensive ef-

fects of very mild degree were seen in only 3 patients. Mild pruritis was reported by one patient, while mild constipation and bulemia each were reported by 2 patients. Three schizophrenic patients, all of whom had difficulty with reality control when consciousness was even slightly depressed, demonstrated aggravation of their psychoses.

The drug had to be discontinued because of adverse side-effects in 2 patients. Extreme aggravation of a schizophrenic psychosis was the reason in 1 case, while an annoying maculo-papular eruption over the upper extremities was the cause in the other. With this second patient, it should be noted that many unrelated drugs have caused the same problem. We have not seen grippelike complications, Parkinson-like symptoms, jaundice or leukopenia in patients treated with promazine. Blood counts performed on 25 patients, while they were on the drug, were all normal.

Patients who had had very severe adverse side-effects with chlorpromazine were switched over to promazine. One who had extreme severe rigidity on 3 occasions with chlorpromazine has been effectively treated with promazine without complications. Two patients who developed jaundice on chlorpromazine were immediately transferred to a similar dose of promazine with rapid disappearance of the icterus. Four patients, 2 with severe general dermatitis and 2 with severe grippelike syndromes, were also switched to equal doses of promazine with rapid disappearance of the adverse side-effects and without any loss of therapeutic effect.

We have noted no clinical evidence of potentiation of the action of barbiturates by promazine.

DISCUSSION

The reports on promazine hydrochloride (2, 3, 4) have dealt mainly with its effects on hospitalized alcoholics. One report (4) also considered its effect on hospitalized opiate addicts and agitated or confused psychotics. The authors were impressed with the tranquilizing effects of the drug in agitated patients. They were also impressed with its antiemetic properties. A few patients were reported as having slight to moderate postural

hypotensive reactions. However, since most of the patients in whom this symptom was reported had organic psychotic effects secondary to alcohol one cannot readily determine whether the promazine, the alcohol, or a combination of both was the major cause of a slight drop in blood pressure. The adverse side-effects of this drug, when compared with those reported for chlorpromazine, appear to be relatively very mild and uncommon.

Our series of 50 patients represented the broad clinical spectrum commonly seen in private psychiatric practice. The drug was given only to those who were severely ill, most of whom would have required hospitalization or ambulatory electroshock therapy, if a tranquilizing drug were not available.

The clinical efficacy of the drug was judged by what we consider a strict scheme that is readily applicable to psychiatric patients seen in private practice, in the outpatient clinics, and in patients following discharge from mental institutions. It stresses the patient's abilities of adaptation and performance both socially and vocationally. In addition, the ability to experience pride and pleasure from his performance is a cardinal feature. The degree of amelioration of anxiety and other symptoms is also important.

On the basis of these criteria we found that 1 of every 3 patients treated with promazine showed very significant improvement. As with chlorpromazine, promazine is effective only in those patients who demonstrate marked anxiety, particularly if the motor component is pronounced. For example, if we consider only the 35 patients who evidenced the greatest degree of anxiety prior to therapy, the drug was significantly effective (improvement ratings I and II) in slightly less than one-half of the cases. On the other hand, as we found for chlorpromazine and the other tranquilizers, the medication was not effective in patients manifesting very

little overt anxiety. The diagnoses, the patient's age or sex did not have any significant bearing on the results. The drug was most effective in acute illnesses of less than 4 months' duration.

In therapeutic efficacy, therefore, promazine hydrochloride appears, on the basis of this relatively small series, to be equal to chlorpromazine hydrochloride.

Promazine hydrochloride appears to have great advantages over chlorpromazine because the adverse side-effects produced by the drug have, thus far, been minimal as compared with those caused by chlorpromazine. Promazine can be used effectively in patients in whom chlorpromazine must be discontinued because of severe complications.

SUMMARY

1. Fifty psychiatric patients treated with promazine hydrochloride, a new phenothiazine derivative, are reviewed.
2. The drug was effective in one-third of the patients treated, but only in those who demonstrated marked anxiety.
3. Dosages and methods of administration are considered.
4. Adverse side-effects are mild and relatively uncommon as compared with those produced by chlorpromazine.
5. Promazine appears to be as effective as chlorpromazine as a tranquilizer in psychiatric practice and deserves further study.

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CHLORPROMAZINE AND CHRONIC NEUROTIC TENSION¹

JULIUS MERRY, M.D., D.P.M., R. A. PARGITER, M.B., B.S., AND H. MUNRO, CAND. PSYCH.²

Chronic neurotic tension states are among the most difficult of psychiatric conditions to treat satisfactorily. A reflection of this difficulty is seen in the number of different treatments that have been advocated for them from time to time. These have included continuous narcosis, "modified" insulin, mephe-sin, acetyl choline, inhalations of 70% carbon dioxide, methyl pentynol and prefrontal leucotomy. None has for one reason or another proved sufficiently efficacious to stop the search for a more adequate treatment.

Chlorpromazine is a recent entrant into this therapeutic field. Favorable reports have been made by Anton-Stephens (1), Garmany, May, and Folks (2) and Silverman (5). None of these investigations was controlled to exclude factors which always operate in a doctor-hospital-patient relationship. The present study was undertaken to evaluate the effect of chlorpromazine on chronic neurotic tension states while trying to control other therapeutic factors of importance.

METHOD

Those recommended for the trial were male inpatients seen soon after admission by 2 psychiatrists (J. M. and R. A. P.) independently. Interviews were conducted to assess the nature and severity of the clinical state and if both psychiatrists agreed that the patient was suffering from a chronic neurotic tension state, he was included in the series. He was then given a week or so to settle down in hospital and during this time he was not allowed to have any sedatives or hypnotics. This initial rest period was brought in to allow the effect of entering into hospital to play its part before commencing treatment with tablets. At the end of this initial period the patient was seen by the psychiatrists for confirmation of diagnosis, and then referred to the psychologist (H. M.) who attempted to make a more objective assessment of the patient's condi-

tion. The patient was then told he was going to be tried on a new treatment and was placed on 25 mg. tablets. The dosage was varied with the patient's response up to a maximum of 300 mg. daily. After 4 weeks the patient was reassessed independently by the psychiatrists and psychologist. Twenty-one patients took part in the trial, half of these having inert tablets of similar appearance to chlorpromazine. The pharmacist was the only person aware of the nature of the tablets and she arranged the distribution of the patients so that the clinician was unlikely to guess which patient was having the chlorpromazine and which the placebo, i.e., it was not a straight series of alternate cases.

As no psychological test methods are available for direct measurement of tension it was assumed for the purpose of psychological assessment (1) that tension will increase mental rigidity relative to the drive available, and thus lower the speed of intellectual work, more so in less formal and clearly defined tasks; (2) that patients selected for tension would vary stochastically on other factors affecting speed; and (3) that chlorpromazine will not directly affect intellectual efficiency. Hence the following tests were given: (1) 25 additions of ten 1-digit numbers, a larger decrease in total time being expected for the experimental than for the control group; (2) 3 Write-a-Story tests, stimulus material being MAPS pictures with scenes constructed by the examiner: (a) impersonal scene: 2 men and a woman on street bridge; (b) daydream scene: benevolent male phantasy figure and a child of either sex on dream stage; (c) "personal" scene, different for each patient and related to his problems and symptoms as described in the case notes.

A decrease in tension was expected to give a decrease in latency time and an increase in speed of construction and length and richness of the story, with the effect probably larger on story b than on a and largest on c.

A test of rigidity in problem solving was

¹ Preliminary report.

² Address: St. Ebba's Hospital, Epsom, Surrey, England.

excluded after testing half the cases because of difficulties in administration and scoring and a questionnaire of subjective symptoms (formulated as a sentence completion test) was substituted. Neither of these was given to a sufficient number of cases to warrant analysis. All tests were prepared in 2 forms and cross control used. Because of irregularities in procedure, language difficulties, and other factors, some cases had to be excluded leaving 16 (8 in each group) for the final analysis of psychological test data.

Scoring of the tests was based on a preliminary (graphic) inspection of temporal pattern, test-retest consistency and scatter in the population. The following measures were employed: (1) Total time for 25 additions; (2) latency time till writing commenced; and number of words written in 3 minutes after writing commenced—the longest period all subjects could be induced to continue. As the 3 stories showed fair agreement, the total score for all 3 was computed. The experimental and control groups were then compared for initial scores and for improvement on retesting, by Mann & Whitley's U-test. No significant differences appeared.

For comparison with the clinical assessment the cases were divided into "improved" and "worse" according to whether or not the difference between test and retest scores was in the expected direction. The division into much and slightly improved and worse is arbitrary. Only the numbers of improved and worse cases are included in this report, but further data can be obtained from the psychologist (H. M.). The results are shown in the accompanying table.

DISCUSSION

There is no clear difference between the results obtained in the chlorpromazine and control groups, clinically, subjectively or on psychological tests. Lambert and Rees(3), in a controlled therapeutic trial on outpatients with anxiety states, found that the results obtained by chlorpromazine were significantly better than with inert tablets: 54% of the chlorpromazine group showed marked or moderate symptomatic improvement. This figure roughly agrees with our findings for both groups. It is also worth noting that this is roughly the same proportion of im-

TABLE 1

RESULTS

	Chlorpromazine	Control
Clinical Assessment		
(21 subjects)		
Improved	6 (2 slightly)	7 (1 slightly)
Not Improved	4	4
Patients' Assessment		
Improved	5	6
Not Improved	5	5
Psychological tests		
(16 subjects)		
Arithmetic (time)		
Improved	5 (2 slightly)	6 (4 slightly)
Worse	3 (1 slightly)	2 (2 slightly)
Stories (total latency)		
Improved	1	3 (2 slightly)
Worse	7 (6 slightly)	5 (1 slightly)
Stories (speed)		
Improved	4 (1 slightly)	3 (1 slightly)
Worse	4 (2 slightly)	5 (3 slightly)

provement achieved with ECT and with "placebo ECT" treatments in anxiety states by Montagu and Davies(4). Lambert and Rees found a high tendency to relapse; in fact, two-thirds of their improved patients relapsed after a few weeks of clinical improvement, despite continuation of chlorpromazine.

While there is no outstanding difference between the results in our 2 groups, there is no doubt that chlorpromazine has definite pharmacological action. But this action is unpredictable in our present state of knowledge, as demonstrated in the following brief case histories.

CASE 1.—Mr. A., aged 50, had been ill for about 15 years. He had been admitted to 3 other psychiatric hospitals before his admission here. His present exacerbation dated from 1953 when he commenced attending a London hospital where he was treated at different times with ECT, "modified" insulin, and sedation. He was not improved by these measures and was admitted to this hospital. When first seen he was tense and restless, and said "I cannot relax." He complained of tight feelings in his abdomen. At the end of his month on tablets he was much improved. It was found that he had been taking chlorpromazine proper. Without the patient's knowing the tablets were gradually changed until he was taking the same dose of inert tablets. His condition deteriorated rapidly. After a day, the midday dosage was again switched to chlorpromazine without his knowing. A dramatic symptomatic improvement resulted within 2 hours of taking this midday dosage.

CASE 2.—Mr. B., aged 49, had been fairly continuously ill for about 30 years. His most recent exacerbation occurred in 1953 when he was attend-

ing a London hospital, where he was treated with a prolonged course of acetyl choline injections. No marked change was achieved and he was admitted here. When seen he complained of tightness in the forehead and of being "so on edge" that he could not settle and concentrate on his work. Within a few weeks of commencing tablets he said he felt better than he had done for years. While on a day's leave, a firework was exploded behind him. He relapsed immediately and at the end of the month of treatment he was as on admission. He had been taking inert tablets and treatment was changed to chlorpromazine. However, a month's course of this never achieved the improvement attained in the first few weeks of placebo therapy.

CASE 3.—Mr. C., aged 35, had been admitted here twice previously. When first seen he was agitated and restless, and constantly sought reassurance for the various somatic expressions of anxiety. When he was taking chlorpromazine, although he was having sufficient of the drug to produce side-effects such as drowsiness, no change was effected in his tension symptomatology.

Of the 4 cases who were unimproved on inert tablets, only 1 showed any improvement when placed on chlorpromazine, immediately subsequent to the initial 4 weeks of medication.

In our series where the dosage of chlorpromazine ranged from 150 mg. to 300 mg. daily, none of the serious side-effects, e.g., blood dyscrasias or jaundice, were observed.

There is not a very good agreement between the clinical assessment and the psychological test results—or among the latter themselves—as regards which patients showed most initial tension and most improvement. This may be due to the inaccuracy of clinical assessment and the employed tests which *in casu* only indirectly measured tension. Or it may be due to the vagueness of the term tension, the 2 approaches in reality assessing different traits. As neither approach revealed any consistent trend, no statistical tests of significance were

undertaken. It appears that individual variations are so great, and that the effect of chemical therapy on the psychological state depends on the interrelation of many personality traits, that only a large-scale study would add sufficiently to our knowledge for prediction of the outcome of a course of treatment.

SUMMARY

1. A controlled study was made of the effects of oral chlorpromazine on chronic neurotic tension states in 21 male inpatients.
2. The dosage ranged from 150-300 mg. daily.
3. Cases treated with chlorpromazine showed no greater improvement than those treated with inert tablets.

ACKNOWLEDGMENTS

We are grateful to the late Dr. D. E. Sands for his encouragement in this experiment; to Mrs. Snell, the pharmacist, for kindly arranging the distribution of the cases and for her valuable help and interest in the reported study; to B. Payne for help with the analysis of psychological test results; and to May & Baker, Ltd., who kindly provided us with chlorpromazine and inert tablets.

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AGRANULOCYTOSIS IN PATIENTS TREATED WITH THORAZINE REPORT OF A FATAL CASE

NAOMI RASKIN, M.D.¹

Up to July 1956 a group of 625 patients were treated with various amounts of Thorazine at the Boston Hospital. Three patients, all women, developed agranulocytosis. Two patients had completely recovered, the third died. As far as could be ascertained 18 fatal cases have been reported in the English-language literature (1). The case herein reported is in the nineteenth.

The side-reactions of Thorazine are well known by now. Agranulocytosis seems to be the most serious, regardless of the dosage or the length of the treatment. Cases of agranulocytosis have also been reported in patients after discontinuing Thorazine. The awareness of this complication has made repeated blood counts mandatory in the patients treated with Thorazine.

Routinely a complete count and differential count are done just before the beginning of the treatment to establish a baseline of patient's normal blood count. The counts are repeated throughout the treatment. No male patient in this series developed agranulocytosis or even a noticeable drop in white blood cell count, but three women did develop serious decrease in white blood cells with the shift to the left. They were taken off Thorazine and given antibiotics. Blood counts were done daily until in two patients the counts returned to their original levels and in the third until the last day.

The course of the disease is acute and the great majority of these patients are middle-aged women, but agranulocytosis is known to have occurred without drug administration and it has occurred in only a small proportion of patients using Thorazine. The role played by individual susceptibility to the drug, the allergy, and other factors have not been determined, but the fact that agranulocytosis affects predominantly the women and the fact that the benefits of Thorazine seem to be more pronounced in women, lead to a supposition that this condition is sex-linked.

CASE 1.—M. J. #52516, a 49-year-old colored woman, suffering from severe depression, was given 55 electroshock treatments with marked improvement at first and return of symptoms later. She was started on Thorazine December 14, 1955, 100 mg. t.i.d., increased to 400 mg. b.i.d. on May 4, 1956, discontinued on June 2, 1956, because of blood changes: original blood count of 8,450 with 57% polys changed to 8,000 with 35% of polys. When she was taken off Thorazine the polys rose to 51%. The drug therapy was not resumed.

CASE 2.—C. M. #55705, a 35-year-old married mulatto woman, with a long history of alcoholism, addiction to barbiturates, and asocial behavior, was started on Thorazine November 11, 1955, 100 mg., t.i.d. On December 3, 1955, the dosage was changed to 100 mg., q.i.d. January 6, 1956, Thorazine was discontinued because the patient's original white count of 6,200 with 60% of polys dropped to 4,250 with 25% of polys. The patient recovered and went home on trial visit.

CASE 3.—G. N. #42355, a middle-aged white woman, was admitted to Boston State Hospital, January 1944, with the diagnosis of involutional psychosis, paranoid type. She was thin and undernourished. Left pupil was wide, did not react to light. No other physical abnormalities: blood pressure, 110/70; Hinton, negative; X-ray of the skull, negative. She was deluded, hallucinated, appeared frightened and agitated. The patient was a college graduate, majored in classical archeology and for the past 18 years worked at a museum. She was single, and had few friends. She was considered high-strung, excitable, irritable, very trying to work with, but she was brilliant in her work. About a year before her admission a refugee woman scholar came to work at the museum. The patient accused her of being a German spy. Soon she began to hear voices, threw things around and threatened to jump out the window. She was said to have started her menopause at the age of 33.

In 1948 she had a series of 33 electroshock treatments, without any benefit. In 1953 X-ray of the chest showed normal heart, emphysematous lungs, moderate osteoporosis of the bones of the thorax and both shoulder girdles, and moderate dilatation and tortuosity of the aorta.

The patient was put on Thorazine, February 2, 1956, 100 mg. t.i.d. She was suspicious of the drug and refused to take it. It had to be mixed with food. Her mental condition showed no improvement.

On February 24, 1956, her white blood count was 6,250, with 65% of polymuclear leucocytes and 35% of small lymphocytes. Eosinophilic count was 56. On March 28, white blood count was 5,250, with 64% of polymuclear, 34% of small lymphocytes, 1% of monocytes and eosinophilic count was 18. On April 13, white blood count was 3,250, with 37% of

¹ From the Pathological Laboratory of the Boston State Hospital, Boston 24, Mass.

polynuclear, 7% of large lymphocytes, 55% of small lymphocytes, 1% of mononuclears and eosinophilic count was 18. On April 18, white blood count was 2,800, with 3% polynuclears, 6% large lymphocytes, 91% small lymphocytes and 380,000 platelets. On April 20, white blood count was 3,000, with 1% of polynuclears, 9% of large lymphocytes, 87% of small lymphocytes and 3% of myeloblasts. On April 23, white blood count was 3,750, with 2% of large lymphocytes and 76% of small lymphocytes. On April 26, white blood count was 6,800, with 73% of polynuclears, 6% of large lymphocytes and 21% of small lymphocytes. On May 2, 1956, white blood count was 13,300, with 83% polynuclears and 17% small lymphocytes, platelets 392,000; red blood count 3,960,000.

The reduction in number of granular cells was slow and gradual. When the count dropped from the original 6,250 to 3,250 the patient was taken off Thorazine, but the decrease in granular cells continued. On the advice of the hematologist she was put on low salt diet, 50 mg. of cortizone q.i.d., 1 gm. of potassium chloride daily plus a wide-spectrum antibiotic—achromycin 250 mg. t.i.d. On this treatment her white blood cells began gradually to rise and on April 23, had risen to 3,750 with 22% of polynuclears and on April 26 her blood count was 6,800 with 73% of polynuclears, i.e., back to her pretreatment level. However, she did not show corresponding clinical improvement. Three days later she developed numerous pustules on her buttocks, legs and abdominal wall for which she received antibiotic therapy. The lesions showed some response, but she developed signs of bronchopneumonia and died May 5, 1956, three months after the initiation of thorazine treatment.

Autopsy was performed 24 hours later. The cause of death was bronchopneumonia and agranulocytosis (resolved).

The body was that of an old, greatly emaciated, white female of short stature with several bed sores on hips and buttocks. The heart showed no gross changes and blood culture taken from the left ventricle was negative. Internal organs showed passive congestion, uterus and adnexa showed senile changes and gastro-intestinal tract showed no gross changes. Lungs had some fibrinous deposits. Abdominal aorta showed mild atherosclerosis. Brain was small, weighed 1,000 gm., showed pronounced atrophy of convulsions of both frontal lobes. The vessels of the base appeared small and delicate. There was a round aneurysm of the left carotid

artery, the size of a small cherry, thin-walled and filled with dark-red, clotted blood. This aneurysm involved the left oculo-motor nerve and produced a shallow indentation of the left hippocampus. Microscopic examination: Lungs showed bronchopneumonia; the exudate contained a great number of large mononuclear cells and only few polynuclears. Myocardium showed no pathological changes. Pituitary gland showed disarrangement of pattern and decrease in basilar cells. Adrenal glands showed changes particularly pronounced in area fasciculata—loss of cells, shrinking, dark-stained cells and groups of round, very pale cells. This picture is consistent with stress reaction as described by Selye. Bone-marrow did not show acellularity; on the contrary it appeared very cellular, but the cells of polynuclear series were few. The nucleated and non-nucleated red cells were numerous. Brain-edema of pia-arachnoid and perivascular edema. No changes in ganglion cells. Copper determination on brain was done with the following results: 920 micrograms per 100 gm. of tissue in basal ganglia and 710 micrograms per 100 gm. of cerebral tissue, which is below the normal values reported by Cumings (2). This analysis of brain tissue was done because of the report (3) of elevated copper in the plasma of patients treated with Thorazine.

CONCLUSION

This case demonstrates two points to be remembered with Thorazine; namely, that the dosage does not have to be high to produce agranulocytosis in susceptible patients, and that even when Thorazine has been withdrawn and replaced by energetic treatment and agranulocytosis hematologically resolved, the clinical course may be fatal.

We are not sure what part had been played by the patient's pulmonary emphysema and cerebral aneurysm in her clinical condition.

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CLINICAL EVALUATION OF MERATRAN AND FRENQUEL ON A CHRONIC PSYCHOTIC POPULATION

BURTON S. ROSNER, PH.D.,¹ LOUIS B. FIERMAN, M.D.,¹ AND JOHN F. KRAMER, M.D.²

Meratran and Frenquel are 2 new drugs which have been recommended for psychiatric use. Meratran is α -(2-piperidyl) benzhydrol hydrochloride, while Frenquel is its gamma isomer, α -(4-piperidyl) benzhydrol hydrochloride.³ Recent reports indicate that Meratran is effective in treating depressed states(1) and that it induces improvement in chronic schizophrenics who do not manifest delusions or marked anxiety(2). Fabing(3) has studied the effects of Frenquel in blocking the development of LSD-25 "psychosis" and has pointed out its possible usefulness as an antihallucinogen. Clinical studies(4, 5) of Frenquel have produced some evidence that it improves a variety of chronic psychotic conditions. Interestingly, the stimulating effects of Meratran appear to be absent from Frenquel.

The present study is a clinical evaluation of Meratran and Frenquel on a sample of chronic psychotic patients. The study was conducted by a "double-blind" procedure with placebos. The effects of the drugs were evaluated through the use of behavioral rating scales with emphasis on the patient's adjustment to the hospital environment.

METHOD

The patients in this study were 63 chronic, long-term psychotics at the West Haven Veterans Administration Hospital. All were male, ranging in age from 29 to 67 years with a median age of 61 years. The patients had been hospitalized from 2 to 44 years; median length of hospitalization was 32

years. Forty-six had been classified as having various types of schizophrenia, 13 paranoid, and 4 alcoholic psychosis. Behaviorally, the patients as a group were markedly apathetic, autistic, and passively submissive. Isolated outbursts of aggressive or sexual acting-out involving single patients occurred occasionally.

At the beginning of the study, the patients were divided by random assignment into 4 groups of 15 to 16. Each group received Meratran, Meratran placebo, Frenquel, and Frenquel placebo according to the schedule shown in Table 1. Every patient received each drug and each placebo for 6 weeks. Meratran and Frenquel were never administered in successive 6-week periods but were always separated by 6 weeks of placebo. On the basis of previous reports, this period seemed ample to permit the effects of the drugs to dissipate. At any given time, one group of patients received Meratran, another Frenquel, while the others were on one of the two placebos.

Administration of the drugs and rating of the patients were executed according to a double-blind procedure. The ward administrator and the nurses who administered the drugs never knew what any patient was receiving. The drugs and placebos were assigned code numbers and were prescribed by those numbers. As a further precaution

TABLE I
EXPERIMENTAL DESIGN FOR ADMINISTRATION
OF DRUGS
6-week Period

Group	I	II	III	IV
A...	Frenquel	Meratran	Meratran	Frenquel
		placebo		placebo
B...	Meratran	Meratran	Frenquel	Frenquel
	placebo		placebo	
C...	Frenquel	Frenquel	Meratran	Meratran
	placebo		placebo	
D...	Meratran	Frenquel	Frenquel	Meratran
	placebo			placebo

¹ Neuropsychiatry Service, West Haven Hospital, West Haven, Conn.

² Associate professor of psychiatry, University of Chicago School of Medicine, Chicago, Ill.

³ Meratran and Frenquel are the trademarks of the William S. Merrell Co., Cincinnati, Ohio. We wish to thank the Merrell Co. for generous supplies of the drugs and placebos used in this investigation.

the code was changed every 6 weeks. Throughout the study a patient on Meratran received 6 mg. daily, while one on Frenquel received 120 mg. daily. The drugs were administered orally before meals. These dosages were the maximum recommended at the time the study began.

The raters who followed the patients' behavior did not know at any time what a given patient was receiving. In order to evaluate the behavioral effects of Meratran and Frenquel, 2 different rating scales were used. The first scale was the Multi-Dimensional Scale for Rating Psychiatric Patients (MSRPP), developed by Lorr, Jenkins, and Holsooppe(6). The first 40 items on this scale were filled out by a psychiatric resident on the basis of a clinical interview with the patient. The remaining 22 items were answered by the ward nurses on the basis of ward observation. The scores on this scale break down into 11 factors or dimensions of psychopathology. These factors are (A) retarded depression versus manic excitement, (B) compliance versus resistiveness, (C) paranoid projection, (D) activity level, (E) melancholy agitation, (F) perceptual distortion, (G) motor disturbance, (H) submissiveness versus belligerence, (I) withdrawal, (J) self-depreciation versus grandiose expansiveness, and (K) conceptual disorganization. In addition, the scale yields an over-all "morbidity" score based on the combined outcomes of the 11 factors. The other scale used was the Hospital Adjustment Scale (HAS), developed by McReynolds and Ferguson(7). This scale, which was filled out by the ward aides, measures the patient's adjustment to the hospital environment and contains 3 subgroups of items. These subgroups are (I) communication and interpersonal relations, (II) care of self and social responsibility, and (III) work activities and recreation. A total score based on all 3 subgroups is also available from this scale. For each subgroup and for the total score, one can determine whether the patient's personality is "expanding" or improving or whether it is "contracting" or becoming more impaired.

The design shown in Table 1 permits each patient to serve as his own control. Ratings were made on each patient during the last 2

weeks of each 6-week period. For statistical studies, a patient's score on any measure during administration of a drug was subtracted from his score during administration of the corresponding placebo. These drug-placebo difference scores were combined for all patients and tested for statistical significance. Two kinds of statistical tests were run. The first was Wilcoxon's nonparametric test for differences between medians (8), which shows whether the patients as a group tend to achieve significantly different scores on any rated variable as a result of receiving a drug. The second statistical test was a nonparametric test for differences in variability,* which shows whether the patients as a group exhibit greater variability on a rated variable after receiving a drug. The test of variability in effect shows whether some patients improve significantly while others worsen, even though there is no net change in the median scores. For each drug, then, a total of 32 statistical comparisons were made: 12 for differences in medians on the MSRPP, 12 for differences in variability on the MSRPP, 4 for differences in medians on the HAS, and 4 for differences in variability on the HAS. As a final check, similar comparisons were made on the patients' scores while on Meratran placebo as against their scores while on Frenquel placebo.

RESULTS

Table 2 summarizes the results of this study. Frenquel created no statistically significant changes on any measure. Nor were there any significant differences between Meratran placebo and Frenquel placebo. The only significant results appeared as a consequence of the administration of Meratran, which produced more perceptual distortion (Factor F., MSRPP) and more tendencies toward withdrawal (Factor I., MSRPP). At the same time, however, Meratran produced increased variability on the perceptual distortion factor, indicating that while some patients showed greater perceptual distortion, a smaller number showed less perceptual distortion.

* Professor Frederick A. Mosteller, Harvard University, kindly provided this test.

TABLE 2
RESULTS OF STATISTICAL ANALYSIS

	Difference in medians	Difference in variability
Meratran <i>vs.</i> placebo		
MSRPP		
Factor F	$t = 2.02; p = .05$	$\chi^2 = 9.50; p = .01$
Factor I	$t = 2.58; p = .01$	No significant differences
All other factors.....	No significant differences	No significant differences
HAS		
Sub-group II C	$t = 2.63; p = .01$	No significant differences
Total C	$t = 2.68; p = .01$	No significant differences
All other groups	No significant differences	No significant differences
Frenquel <i>vs.</i> placebo		
MSRPP	No significant differences	No significant differences
HAS	No significant differences	No significant differences
Frenquel placebo <i>vs.</i> Meratran placebo		
MSRPP	No significant differences	No significant differences
HAS	No significant differences	No significant differences

The results from the HAS confirm the findings on Factor I of the MSRPP. On the HAS, Meratran produced a significantly greater number of "contracting" scores on Subgroup II, which concerns care of self and social responsibility. This indicates that the patients became less able to care for themselves and to take on social responsibility. Furthermore, the total number of "contracting" scores on all items on the HAS increased significantly during administration of Meratran. All differences are significant at the .01 level or beyond, except the median difference for Factor F, perceptual distortion, which is significant at the .05 level. Each of the former differences would have arisen by chance less than 1 time in 100; the latter difference would have arisen by chance 5 times in 100.

DISCUSSION

Our results generally fail to confirm those reported previously. We found no statistically reliable effects of Frenquel on long-term chronic psychotic patients. The most striking effect on Frenquel reported to date is its ability to antagonize LSD-25 "psychosis." Our data indicate that a drug possessing this property does not necessarily have any marked effect on a chronic psychotic population, at least in the dosage used in this study. In particular, there was no reliable effect on hallucinatory or delusional phenomena as measured by Factors F and J of the MSRPP.

More interesting are the data on Meratran. In general, this drug created more social withdrawal and irresponsibility. The ratings by nurses on the MSRPP and by aides on the HAS both agree on this fact. We found no evidence of a stimulating effect, which should have appeared on Factor D, activity level, or Factor A, retarded depression *vs.* manic excitement, of the MSRPP. The effects of Meratran on perceptual distortion are more complex. The net effect of the drug was to increase tendencies toward hallucinatory phenomena and disorientation. This is in line with the findings of Schut and Himwich(2), who report that the presence of delusions is a contraindication for Meratran. However, Meratran did seem to lessen perceptual distortion in a few patients as evidenced by the significant test for variability on Factor F. Individual review of the data shows no correlation between this latter effect and the patient's pre-drug status or diagnosis.

SUMMARY

Meratran and Frenquel were administered by a double-blind procedure to 63 chronic psychotics whose behavior was rated by psychiatric residents, nurses, and aides. Frenquel produced no significant changes in the rated behavior. Meratran seemed to exacerbate social withdrawal and irresponsibility. Meratran failed to increase the over-all activity level and failed to decrease depressive symptoms. Finally, Meratran had a signifi-

cant tendency to aggravate perceptual distortion in some patients but also counteracted hallucinatory phenomena and disorientation in a few other patients.

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INVESTIGATION OF THE THERAPEUTIC COMPONENTS AND VARIOUS FACTORS ASSOCIATED WITH IMPROVEMENT WITH ELECTROCONVULSIVE TREATMENT: A PRELIMINARY REPORT^{1, 2}

N. Q. BRILL, M.D.; E. CRUMPTON, PH.D.; S. EIDUSON, PH.D.; H. M. GRAYSON, PH.D.;
L. I. HELLMAN, PH.D.; R. A. RICHARDS, M.D.; H. D. STRASSMAN, M.D.; AND
A. A. UNGER, M.D.³

Although electroshock is extensively used in the treatment of the mentally ill, the way in which it works is not known. The many theories that have been advanced may be roughly divided into those postulating primarily organic mechanisms and those presupposing mechanisms which are primarily psychological. Better understanding of the mode of action of electroshock might, on the one hand, contribute to improvement in the technique and, on the other, give some clues as to the nature of mental illness itself.

Much theorizing but little research has been done on the therapeutic role of psychological factors since the time of Cerletti's original work. It is believed by some that fear of treatment is the basis for improvement. Others have suggested that ECT satisfies a need for punishment stemming from feelings of guilt, or that the fear of death provoked by the treatment or the victory over a death threat with symbolic rebirth is responsible. Fisher, *et al.*(1), using clinical interviews and psychological tests, found tendency toward improvement to be nega-

tively related to fear of shock treatment and especially the fear of death that is associated with the treatment.

Most of the psychological studies on ECT have been concerned with its effects rather than the nature of its action or the reasons for its varied effect in different types of disorders. Research interest has most often been directed to the question: Does permanent brain damage or memory impairment result from ECT? Despite the emphasis on this one aspect of personality functioning, there still exist differences of opinion as to whether there is a permanent memory defect (2). Holzberg and Cahen(3) investigated pathologic changes in personality as reflected in repeated Rorschach testing during complete courses of treatment. Their findings suggest that "personality rigidity" may characterize patients who do not respond favorably; however, no attempt was made to assess the prognostic value of this personality variable.

A large number of investigations have emphasized the direct effect of the electrical current introduced into the brain. This has been variously described as stimulating, disrupting or damaging to specific or diffuse areas of the brain. The effect on autonomic nervous system functioning has been emphasized by Gellhorn(4), who believes that the therapeutic effect results from a central stimulation of the sympathetic adrenal systems; by Parker(5), who presents some evidence, that the effect is due to central stimulation of both sympathetic and parasympathetic systems; and by others. Despite a great deal of work in this area, there exists no consistent description of the effects of electroconvulsive treatment on autonomic centers, nor of their possible relationship to improvement. Funkenstein's work(6) on the autonomic activity of the mentally ill (using primarily systolic blood pressure re-

¹ Read at the 112th annual meeting of The American Psychiatric Association, Chicago, Ill., April 30-May 4, 1956.

² From The Veterans Administration Center (Brentwood Neuropsychiatric Hospital), Los Angeles; the department of psychiatry, University of California School of Medicine, at Los Angeles; and The Neuropsychiatric Institute. This study was supported in part by a grant from the Southern California Society for Mental Hygiene (May 1954). Statistical analysis of data was performed under the sponsorship of the Office of Naval Research and the Office of Ordnance Research.

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sponse to mecholyl and epinephrine as the index of autonomic responsiveness) led to his developing a method of predicting outcome of treatment with ECT. The effect on base level autonomic functioning, such as is measured by Wenger's autonomic index(7) which is derived from a number of measures, has not been sufficiently investigated.

The changes in concentration of 16 constituents in the blood of 276 patients undergoing ECT have been reported by Katzenbogen, *et al.*(8). The data represented single values found in the immediate postshock period, not exceeding 1½ hours. Thus the values reported reflect the immediate effects and shed little light upon the long-term relationship to improvement or to specific psychological or physiological variables. These same considerations hold for many of the other investigations reported in the literature concerning blood and urine metabolites, glucose, cholesterol, steroids, etc.(9, 10).

It may be that the marked variations found in the results of the studies cited above are due to the arbitrary timing of obtaining samples following treatment(11) and the lack of intensive and simultaneous analysis, during a complete treatment program, of many of the important psychiatric, psychological, and physiological variables.

However, some investigations have led to the implication of certain metabolites and metabolic systems in ECT in particular, and in mental disease in general. That adrenal cortical responsiveness may be involved in the effects of ECT has been postulated by Hoagland and co-workers(12) and by Pincus, *et al.*(13). That phosphate metabolism may be related to mental diseases has been reported by Hoagland, *et al.*(14).

Klein and Olsen(15) observed that electrically induced convulsive activity increased adenosine diphosphate (ADP) and inorganic phosphate in brain tissue of cats, whereas decreases were found in phosphocreatine and adenosine triphosphate (ATP). It is interesting to note that Aboot(16) found that electrical stimulation of rat brain mitochondria inhibited phosphocreatine and accelerated oxidation. Rinkel, *et al.*(17) have postulated that a natural error in the adrenalin system may be an important factor in the occurrence of a psychosis. Also, Funkenstein and co-workers(18) present data which

suggested that one type of blood pressure rise in normotensive students in response to stress was due to an epinephrine-like substance, and another type of response which suggested a norepinephrine-like substance. Recently, Weil-Malherbe(19) investigated the effects of ECT on adrenalin and noradrenalin in plasma immediately following shock. He observed a rise in adrenalin and suggested that it was a primary effect, perhaps due to the stimulation of the autonomic centers of the brain, which is involved in the therapeutic mechanism. A rise in noradrenalin which was also found was thought to be a secondary effect. These investigations suggested a need to extend such observations over a long-range course of treatment in an attempt to expose the relationship of these metabolites and metabolic systems to other nonbiochemical variables.

We, therefore, undertook a study designed to investigate some aspects of ECT itself and the degree to which various physiological, biochemical, and psychological factors in the patient were related to its effectiveness. We were particularly interested in testing the following 3 hypotheses: (1) That of all of the elements of shock treatment, it is the total loss of consciousness rather than the muscular component of the convulsion or the electrical stimulation that is the significant factor related to improvement; (2) that repeated unconsciousness produced by electrical stimulation is no more effective than repeated unconsciousness relatively rapidly induced by other means; and, (3) that the degree of improvement is correlated with the pre- and post-treatment physiological, biochemical, and psychological status of the patient, and with the psychological meaning of the treatment to the patient. We were particularly interested in the relation between the depressive component in the patient's illness (regardless of diagnosis) and improvement.

METHOD

Patients were assigned at random to 1 of 5 treatment groups. Group I received orthodox ECT * (introduction of electric current

* An Electronicraft machine, Model #107, which produces a glissando-type sinusoidal current was used with electrodes applied fronto-temporally.

into the brain with loss of consciousness and grand mal seizure). Group 2 received ECT with the major portion of the motor component of the grand mal seizure eliminated by the use of anectine (10-20 mg.). Group 3 received ECT while under Pentothal anesthesia (the same elements were involved as in Group 1, except that unconsciousness was induced prior to the shock treatment). Group 4 received repeated Pentothal anesthesia, but no electroshock. Group 5 received repeated nitrous oxide anesthesia (85% nitrous oxide and 15% oxygen) but no electroshock.

It should be stated at the outset that every effort was made to keep the patient from knowing which treatment he was receiving. Electrodes were applied to all patients and a minimal amount of cutaneous electrical current (20 milliamperes) was briefly applied to Group 4 but not to Group 5. Patients were sometimes aware that they were not getting regular ECT, but in these instances they believed they were receiving some variation of it. One person, with no knowledge of the patients, assigned them at random to one of the treatment groups. (In a few instances the existence of spinal pathology necessitated assignment to either a nonshock group or ECT plus anectine.) Those who did the physiological, biochemical, and psychological evaluations did not know what treatment the patient was receiving.

Patients were assigned to this study only after it had previously been decided that shock treatment was indicated and that they had not had shock treatment in the past 9 months. All were male veterans, most of them suffering from chronic schizophrenic reactions, and approximately one-half were readmissions. Most were placed in the study immediately following admission. The distribution of patients by diagnosis and treatment groups is shown in Table 1. The following categories of patients were considered unsuitable for the study: (1) Those who had ECT in the past without improvement; (2) those in relatively good contact with reality, well-motivated for treatment, with sufficient intelligence to enable the development of meaningful insight (candidates for psychotherapy); (3) chronic regressed schizophrenics who were treated in the past, who were free of overt anxiety, not actively hal-

TABLE 1
DISTRIBUTION OF PATIENTS BY DIAGNOSIS AND TREATMENT GROUP

Diagnosis	Regular ECT	ECT and anectine	ECT and pentothal	Pentothal	Nitrous oxide	Total
Schizophrenic reaction						
Catatonic	2	1	1	3	1	8
Paranoid	2	3	4	2	4	15
Chronic undifferentiated	1	3	—	1	—	5
Schizo-affective ..	2	—	1	1	—	4
Psychotic depression.—	—	—	—	—	1	1
Manic depressive psychosis	—	—	1	1	1	3
Total	7	7	7	8	7	36

lucinated or deluded, who showed little in the way of emotional response or lability and in whom little or no further improvement could be expected; (4) chronic paranoid schizophrenics with well-fixed delusions who had become adjusted to a hospital existence and did not constitute management problems; (5) those previously treated with ECT who had attained fairly constant unchanging adjustment with fixed residual delusions that precluded good adjustment outside of hospital; (6) those with good premorbid adjustments who had previously responded to insulin shock treatment with good, fairly sustained remissions (given insulin shock rather than ECT); (7) selected patients with first attacks of schizophrenia, usually paranoid, who had relatively acute onsets (except those with catatonic excitement or stupor, who were difficult management problems). (These patients were given insulin shock treatment.); (8) those with gross organic defects of the central nervous system, e.g., prior lobotomy, brain tumors, residuals of subdural hematoma, or any evidence of CNS syphilis.

Duration of illness and extent of previous ECT *per se*, were not factors in selecting patients. The average age was 38 with extremes of 21 and 60; average length of illness 5 years, with 13 cases of over 10 years' duration (of whom 12 were admitted with recurrences).

Once a patient was assigned to this study group, he was placed on a complicated testing

schedule which provided the opportunity to obtain all the required pretreatment data as well as changes that occurred during and after treatment.

The various factors studied and the length of time they were studied are shown in Table 2. The constant cooperation and integrated functioning of nurses, technicians, and research personnel were achieved by weekly orientation meetings.

In order to quantify the data for statistical analysis, psychological test results⁸ were reduced to 23 scales⁹ many of which were

⁸ The following tests were administered to each patient: *Individual Tests*—Wechsler Adult Intelligence Scale, Rorschach, Fisher Thematic Apperception Test, Bender-Gestalt, Brentwood Word-Chain Association Test, Hildreth Feelings & Attitudes Scale, Hildreth Psychological Change Scale; *Group Tests*.—Shipley-Hartford Scale, Grayson Perceptualization Test, Draw-A-Person, Saxe Sentence Completion Test, Minnesota Multiphasic Personality Inventory (MMPI).

⁹ Rating Scales for Use with Psychological Tests.—Functioning Intelligence; Intellectual Impairment; Organic Involvement; Bizarreness; Most Pathological Breakdown of Ego Defense (potential for psychopathology as revealed by the most ex-

developed especially for the study. In addition, a special clinical evaluation scale was developed along with 5 scales relating to the

treme disruption of psychological efficiency which occurs in the Rorschach); Frequency of Occurrence of Breakdown of Ego Defense (extent to which disruption of psychological efficiency occurs in the entire battery of tests); Manifest Anxiety; exaggerated guilt; self-expression of mood; projective expression of mood; cognitive speed (degree of retardation or acceleration of intellectual processes determined from verbal reaction times, response times, and similar indications); Motor Speed (degree of retardation or acceleration of motor activity determined from tasks such as the Bender-Gestalt, Grayson Perceptualization Test, and WAIS); Self-esteem (the patient's estimation of himself as revealed in his statements about himself, his attitudes toward his test productions, and the projective material, e.g., "extreme self-depreciation"); Dependency; Direction of Relationships (tendency to move toward, against, or away from people in interpersonal relationships, e.g., compliant, hostile, detached; based primarily on fantasy conceptions of interpersonal relationships in Rorschach and Fisher TAT); Aggression (degree to which handling of aggressive impulses constitutes a problem which interferes either with personality adjustment or with adjustment to society; estimated from the projective tests); Direction of Aggression

TABLE 2
THE VARIOUS FACTORS STUDIED AND TIMES

Factors studied	Before Rx	During treatment					After treatment				
		Week of Rx 1	Week of Rx 4	Week of Rx 7	Week of Rx 10	Week of Rx 19	3 weeks	3 weeks	4 weeks	5 weeks	3 months
Psychiatric data:											
Clinical evaluation ...	X	—	—	—	—	—	—	—	X	—	—
Lorr scale	X	—	—	—	—	—	—	—	X	—	—
Fear interview	X	X	X	—	X	—	—	—	X	—	—
Physiological data:											
Funkenstein	X	—	—	—	—	—	X	—	—	X	—
EEG	X	—	—	—	X	X	—	—	—	X	X
Autonomic measures*. X	—	—	—	—	—	—	—	—	X	—	—
Biochemical determinations:											
Blood †	X	—	X	X	—	—	—	X	—	X	—
Spinal fluid †	X	—	—	—	—	—	X	—	—	X	—
Urine (ACTH series)‡. X	X	X	—	—	—	—	X	—	—	X	—
Glucose tolerance ... X	X	X	—	—	—	—	X	—	—	X	—
Radioactive iodine ** . X	—	—	—	—	X	—	X	—	—	—	—
Psychological tests:											
Group battery	X	—	—	—	—	—	—	—	X	—	—
Individual battery ... X	—	—	—	—	—	—	—	—	X	—	—

* Oral Temperature, salivary output, palmar GSR (relaxed), palmar GSR (stress), volar GSR, diastolic blood pressure, heart period, respiration period.

† Total catecholamines, protein bound iodine, serum sodium, serum potassium, serum calcium, glucose, uric acid, and creatinine.

‡ Sodium, potassium, calcium, total protein.

** Inorganic phosphate, *¹⁷ketosteroids, hydroxycorticosteroid, ** uric acid, creatine, and creatinine.

** Not evaluated for preliminary study.

nature and degree of fear of shock treatment based on observed as well as interview material.

Treatment was given 3 times a week and, generally, a course of 20 treatments was administered to each patient. No individual psychotherapy was given during the period of active treatment, but all patients participated in the regular hospital activities program. It is recognized that the attention the patients received or the hospital program in which all participated might affect the results to an unknown degree, but, at least on the objective level, these elements were the same for all patients.

The study has been in progress for 1½ years, and the present preliminary report is based on 36 completed cases. An additional 17 were started but were dropped for a variety of reasons such as pretreatment improvement, elopement, refusal of treatment, etc.

RESULTS

To determine whether the 5 treatment groups were reasonably well-equated, the distribution in these groups of 27 variables⁷

(tendency to turn aggressive impulses inward or toward the environment, i.e., the patient's conception of himself as aggressor or target; based on the projective tests); Sexual Conflict (degree to which handling of sexual impulses constitutes a problem which interferes either with personality adjustment or with adjustment to society; estimated from the projective tests); Identity Confusion; Repression (the change after treatment in effectiveness of repression; based on the increase or decrease of libidinal content or other indications of open conflict, especially in the projective material); Fear of Shock (degree of fear of shock treatment; estimated primarily from the Word-Chain Association Test and secondarily from the Fisher TAT); Expectation from Shock (the expected outcome of shock treatment, e.g., death, harm, help; estimated primarily from the Fisher TAT and secondarily from the Word-Chain Association Test); Change in Psychological Status.

⁷ Diagnosis; duration of illness before treatment; type of illness; age of patient; age at onset of illness; premorbid personality; previous shock treatment; degree of obvious external stress precipitating original illness; self-expression of mood; projective expression of mood; cognitive speed; motor speed; self-esteem; exaggerated guilt; fear of shock (psychological tests); expectation from shock (psychological tests); Lorr Pattern of Manic Excitement; Lorr Pattern of Mournful Depression; Lorr Pattern of Panicky Agitation; general fearfulness

which might have prognostic significance was determined. No indication of significant bias was found.

Three different kinds of ratings of improvement were made 1 month after the end of treatment: (1) comparison of clinical evaluation before and after treatment; (2) change in the Lorr psychiatric rating scale (20); and (3) change in psychological status. While the statistical agreement among these 3 methods of rating ranged from fair to excellent, there was considerable variation in ratings of improvement among them. Whether these ratings indicate long-term or only temporary improvement cannot be determined until follow-up studies are done.

It should be emphasized that no conclusions can be drawn from such a small series of cases and the results presented here merely indicate trends which will be subjected to continuing study as the sample increases in size. Because of the multiplicity of factors which may influence response to treatment most of the individual relationships with improvement that were found were "weak." In other words, the ability of any individual variable to predict improvement with ECT was low. However, although weak, all were statistically significant in that they cannot be accounted for by chance. The probability of a true relationship was better than 90 in 100 in all cases reported, and in some cases the probability exceeded 999 in 1,000.⁸

COMPARISON OF RESULTS OF THE DIFFERENT TREATMENTS

Although the group receiving regular ECT had the highest rate of improvement on the clinical evaluation scale, and the group receiving anectine plus ECT had the lowest, the differences among the 5 treatment groups

scale; degree of fear of ECT (verbal); degree of fear, nonverbal, as related to ECT; attitude toward ECT (verbal); attitude toward ECT (nonverbal); Funkenstein; total catecholamines; serum calcium.

⁸ For all variates (ordered or non-ordered), a general test for randomness (Poisson) was applied in order to discover any relationship between two variates. For ordered variates, the simple linear regression coefficient b was computed as a measure of the ability of the variate to predict improvement, i.e., the approximate strength of the relationship when the relationship is linear.

were no greater than would be expected by chance alone (Table 3).

Of the 36 cases, 8 were diagnosed as depressions or schizo-affective disorders with clinically significant and evident depression, and 28 as schizophrenic reactions, primarily paranoid or catatonic. When just those with evident depressive features were considered, a trend toward greater clinical improvement was seen in the depressive cases who had received 1 of the 3 variations of ECT (4 of 4), as compared with those who had received just Pentothal or nitrous oxide (2 of 4). When just those with schizophrenic reactions were considered, no trend toward a difference was found between the shock and nonshock groups.

PRETREATMENT MEASUREMENTS AND RESULTS OF TREATMENT

Depression.—It has been postulated that the degree of improvement with ECT is positively correlated with the extent of the depressive component in a patient's illness. This proved to be the case when the results of treatment (electrical or not) of patients with clinically recognizable depression were compared with those of others (Table 4). After the schizo-affective cases were excluded, no clear-cut differences in degree of improvement between the various sub-types of schizophrenia were found (regardless of type of treatment).

Ratings on 9 different factors ordinarily involved in the estimate of the depressive components of illness were made on all 36

TABLE 3
CLINICAL CHANGE IN THE VARIOUS TREATMENT GROUPS

Clinical change	Regular ECT	ECT and anesthetic	ECT and pentothal	Pentothal	Nitrous oxide	Total
Very marked improvement . . .	1	—	2	—	—	3
Marked improvement . . .	4	1	2	3	3	13
Slight improvement . . .	2	4	1	1	2	10
No change	—	2	2	4	1	9
Worse	—	—	—	—	1	1
Total	7	7	7	8	7	36

TABLE 4
IMPROVEMENT RELATED TO DEPRESSIVE COMPONENT

	Very marked improvement	Marked improvement	Slight improvement	No change or worse	Total cases
Depression apparent clinically . . .	3	3	—	2	8
Others	—	10	10	8	28
Total	3	13	10	10	36

cases. Three were derived from the Lorr scale and 6 from psychological tests: Lorr patterns of manic excitement, mournful depression, and panicky agitation; and psychological test scales of self- and of projective expression of mood, cognitive and motor speed, self-esteem, and exaggerated guilt.

No clear-cut relationship was found between these scales of pretreatment depressive factors and clinical improvement except for "self-expression of mood" and "exaggerated guilt." All patients with no sign of "self-expressed depression" improved (9 of 9), in contrast with only 60% of those with "self-expressed depression" (14 of 23). The meaning of this is obscure, since, when just those who did express depression and who had shock treatment were considered, 10 of 13 improved in contrast with only 4 of 10 who did not receive shock treatment.

Contrary to what might have been expected, the absence of "expression of exaggerated guilt" was related to improvement in those who received shock treatment as well as in those who did not. Six of 12 with "exaggerated guilt" improved clinically in contrast to 12 of 14 without "exaggerated guilt."

To determine the relationship between improvement (with all types of treatment) and the extent of the more subtle depressive components of illness (regardless of diagnosis), the relationships between all measures of depressive component and improvement were re-examined with the clinically diagnosed depressives eliminated from consideration. The only relationship still seen was the exaggerated guilt where the negative relationship persisted.

Other Pretreatment Measures.—Although we found a few case history variables (age

at onset of illness, degree of obvious external stress, type of course of illness, duration of illness before treatment, premorbid personality, and previous shock treatment) with suggestive relationships to improvement, none was very strong, and they may have been contaminated by direct influence of other variables.

Of the pretreatment physiological measures studied (EEG) autonomic balance, and Funkenstein test) only the Funkenstein scale appeared to have predictive value. Most of the cases fell in Funkenstein Group I and II-III. Group II-III had a definitely higher improvement rate than did Group I.

Protein bound iodine, serum potassium, serum calcium, serum sodium, spinal fluid potassium, blood uric acid and blood catecholamines were found to have very weak but nevertheless better than chance relationships with one or more improvement scales. Except for spinal fluid potassium, they appear to have a more significant relationship with ratings of psychological improvement than with ratings on the Lorr or clinical scale.

Of all the biochemical determinations, only blood catecholamines, serum calcium, spinal fluid potassium and urinary creatinine showed better relationships with improvement in the groups treated with a form of ECT than in the nonshock groups. It may be that these variables can give some information about the biochemical pattern of those who may be expected to improve with shock treatments as compared with those who improve with the other treatments.

The psychological variables which appeared related to improvement were: most pathological breakdown of ego defense (improvement being associated with a high degree of potential psychopathology as revealed by the Rorschach test); anxiety (the lower the anxiety rating, the greater the improvement); aggression (the greater the problem in aggression, the greater the improvement); direction of relationships (compliant improving most often and hostile least often); frequency of breakdown of ego defense, dependency, and organic involvement. Of these, the best relationships with improvement were found with "most pathological breakdown of ego defense" and "anxiety." However, none of the relationships was very strong, and the

interpretation of the findings is not possible at this time.

CHANGES BETWEEN PRE- AND POST-TREATMENT MEASURES AND IMPROVEMENT

The EEG after treatment and the changes in the autonomic index and Funkenstein test showed no significant relationship to improvement; however, there was some tendency for a decrease in autonomic dispersion to be related to improvement.

An increase in 17-ketosteroid excretion was related to improvement. In addition, patients who showed a change from a pre-treatment abnormal response to the administration of 25 mg. of ACTH (*i.e.*, too little increase, no change or decrease) to a post-treatment normal response improved slightly but significantly more than patients who showed a persistence of abnormal response.

For the shock group, but not the total group, a decrease in blood uric acid appeared to be weakly associated with improvement. Conversely for urinary uric acid, a stationary or increased concentration was similarly weakly associated for the total group, while unimproved cases showed a tendency to a decrease.

As might have been expected, improvement was reflected in changes in several psychological variables, a higher rate of improvement being associated with decreases in "bizarreness," "potential psychopathology revealed by the Rorschach test," "frequency of breakdown of ego defenses," and "anxiety." For both the shock and the total group, there was some tendency for improvement to be associated with an increase in repression; however, some improved cases decreased in repression.

PSYCHOLOGICAL MEANING TREATMENT

Of 5 clinical and 2 psychological measures of fear of and attitude toward ECT,⁹ 4

⁹ Clinical Scales.—General Fearfulness Scale (degree of fear displayed generally, not specifically related to ECT); degree of fear of ECT (verbal) (degree of verbal expression of fear, both spontaneous and on being questioned); degree of fear, nonverbal, as related to ECT (based on clinical cues, such as, "looks anxious, pale, dilated pupils"); attitude toward ECT (verbal) (verbal expression of attitude, both spontaneous and on being ques-

showed a suggestive weak relationship with improvement. A high degree of general fearfulness rated clinically before treatment tended to be weakly associated with a higher rate of improvement. (This is an apparent contradiction to the finding for anxiety which was determined by a battery of psychological tests. It would appear that psychological determination of anxiety does not measure precisely the same thing that clinical evaluation of general fearfulness does.)

Fear of shock (by psychological tests) was weakly related to clinical improvement but to a similar degree negatively related to improvement as measured by the Lorr scale.

Patients who expected death (as determined by psychological tests) as a possible outcome of shock treatment (whether or not they were receiving it) improved slightly more often (8 of 10) than did patients who expected more benign outcomes, such as "harm" or "help" (14 of 21). The attitude toward treatment as expressed verbally by the patient (*i.e.*, eager or resistive) and the degree of fear expressed verbally showed no relationship to results.

Both extremes of fear which were not verbalized by the patient but estimated by the psychiatrist from the appearance of the patient were weakly associated with improvement.

From a statistical point of view in this small series of cases, there appear to be weak, subtle relationships between fear of and expectation from ECT and improvement, but the nature of these relationships and their direction vary, and evaluation is difficult at this time. Our clinical impression was that fear of shock treatment was universal in our cases.

DISCUSSION

In considering the implications of these results, it should be emphasized that the findings are based on data from only 36 cases, all male veterans, many of whom had chronic illnesses; and that "improvement" refers to evaluations made 1 month after treatment.

At this stage of the investigation our re-

tioned, such as, "Let's go," "Do I have to?", "I won't take it"); attitude toward ECT (nonverbal) (based on behavioral cues, such as "jumps on table," "has to be pulled"). *Psychological Scales*.—Fear of shock; expectation from shock.

sults do not warrant even tentative conclusions about the relative effectiveness of the different components of ECT. Such differences as were found among the various treatment groups were no greater than chance alone might produce.

Clinically depressed patients when considered as a separate group seem to respond better than do others. However, a positive effect in these patients was also produced (but to a lesser degree) by unconsciousness produced without electroshock. When each of the common clinical and psychological manifestations of depressions was individually correlated with results of treatment, only weak suggestive findings were seen, and in no instance were they as clear-cut as with the clinical diagnosis of depression. This was the case for the 3 groups treated with a variation of ECT as well as for the entire sample.

No combination of manifestations of depressions could be developed that would give results comparable to those obtained with clinical diagnosis of depression, and it seems clear that what is involved in a clinical depression is not completely reflected in the common manifestations which are ordinarily used to describe them. The measures of depressive component of illness which we used were not able to identify levels of subclinical depression in the schizophrenic patients which were postulated on theoretical grounds to be related to improvement. Our findings point out the need for clarification and definition of the concept of the depressive component. If our present methods are detecting depression, our findings, even with the small sample, indicate that improvement with shock treatment is related to factors other than just the depressive component, as seen clinically or determined from psychological tests.

Improvement was found to be weakly associated with general fearfulness, expectation of death from treatment, and nonverbalized fear of shock treatment. The findings suggest that there is some relationship between fear of shock and improvement; however, it clearly is not strong enough (as determined here) to explain adequately the mode of action of shock treatment nor, in itself, to be a reliable prognostic tool.

Our results support Funkenstein's findings that his Group II-III improved more

often with ECT than did Group I. Additionally, the differences between these Funkenstein groups were found when the entire sample (shock and nonshock groups) was analyzed. The Funkenstein test was a more reliable measure of prognosis than the autonomic index developed by Wenger and derived from a number of measures of autonomic function.

Our findings on the biochemical level with regard to adrenal responsibility are consistent with those of Hoagland, *et al.*, in that those patients who showed a change from an inadequate adrenocortical response to stress to an adequate one showed a slight tendency to greater improvement. Factors other than 17-ketosteroid excretion and response to ACTH administration, such as hydroxycorticosteroid excretion, uric acid-creatinine ratio, etc., which will permit the formulation of an index of adrenal responsivity, have not as yet been analyzed.

It is possible that certain of the pretreatment biochemical variables studied here have some weak prognostic significance. At present, there is no explanation for the suggestive relationship observed between blood and urine uric acid values and improvement as measured by both clinical and psychological scales.

It is most interesting that better than chance relationships were found between the pretreatment levels of total catecholamines and pretreatment Funkenstein test values, as well as between each of these and changes in anxiety levels produced by treatment. Further elucidation of the relationship of these 3 variables must await further results of our determinations. Studies now in progress, which differentiate the concentration of epinephrine and norepinephrine, may clarify their relationship.

Pretreatment psychological variables which appear to have some weak relationship with improvement are of 2 kinds—those indicative of the effectiveness of ego defenses and those concerned with conflict areas. Changes in psychological variables resulting from treatment which were related to improvement, however, were only those reflecting the effectiveness of ego defense.

Although the 3 improvement scales correlate highly among themselves, certain of the

biochemical and psychological variables are related to 1 or more of the improvement measures but not to all 3. This finding perhaps indicates that, although these 3 scales are indeed measuring some similar components of improvement, they are obviously measuring different components as well. For example, the Lorr scale was developed as an objectification of psychiatric judgment of improvement. Our data show Lorr scale improvement to be negatively related to fear of shock (psychological tests), whereas clinically evaluated improvement is positively related to the same variable. By having such a large number of variables simultaneously considered, it is not unlikely that we may be able to determine with a large number of cases not only their similarity but also more precisely how the 3 measures of improvement differ from one another. It would seem necessary that, when any variable is considered with respect to improvement (as have been legion in the literature), the definition of improvement be stated precisely. Our results using the 3 different criteria of improvement show how misleading it would be for one group of workers to compare their data with those of another group when different measures of improvement were employed.

SUMMARY

1. This is a preliminary report of a study designed to investigate the mode of action of ECT and the degree to which various physiological, biochemical and psychological factors in patients were related to its effectiveness. Thirty-six patients were assigned at random to a course of 1 of 5 treatment methods: ECT; ECT with anectine; ECT with Pentothal; Pentothal; and nitrous oxide.

2. There were no significant differences among the 5 treatment groups with respect to improvement. When just schizophrenic patients without clinical depression were studied, the results obtained by ECT were the same as those obtained by repeatedly rendering the patient unconscious by Pentothal or nitrous oxide. Consistent with clinical experience, there was a greater degree of improvement seen in patients with clinically evident depression than in those with no

clinical depression, regardless of type of treatment received.

3. Contrary to expectations, patients with no sign of "self-expressed depression" and without "exaggerated guilt" improve most often.

4. Some confirmation was obtained of the predictive value of the Funkenstein test, and weak but better than chance relationships were found between improvement and protein bound iodine, serum potassium, serum calcium, spinal fluid potassium, blood uric acid and blood total catecholamines. An increase in 17-ketosteroid excretion as well as improved adrenocortical response to stress appeared to be related to improvement.

5. The psychological test variables which related best, although weakly, with improvement were "the potential for psychopathology" and "anxiety."

6. Improvement was found to be weakly associated with general fearfulness, expectation of death from treatment and nonverbalized fear of shock treatment. The findings suggest that there is some relationship between fear of treatment and improvement. However, it clearly is not strong enough (as determined here) to explain adequately the mode of action of shock treatment, nor in itself, to be a reliable prognostic tool.

7. Fear of shock treatment seemed to be universal in the patients studied but the design of the study did not provide adequately for the determination of the unconscious meaning of the treatment to the patients.

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DISCUSSION

LEO ALEXANDER, M. D. (Boston, Mass.).—The authors of this study have made a valiant attempt to subject a number of theories about the action of electroshock to a controlled validation test. They are to be congratulated on their determined scouting effort since their task seems well nigh insuperable. A fourth-year Harvard Medical School student, Mr. T. Corwin Fleming, has recently written a thesis on electroshock which I was invited to discuss. He came up with the delightful observation on the confusing array of electroshock theories which I should like to quote verbatim: "In 1938, Cerletti published the first theory on the mechanism of action of electric shock treatment. In 1948, ten years later, Gordon was able to collect 50 such theories from the literature. If the number of theories had increased in a linear fashion, there would be 89 today. But since we are dealing with a biological phenomenon, the number of theories should follow a growth curve. It is then possible to calculate that there are 1,150 theories now extant and a new one is coming out every day."

We can hardly blame the authors if out of this vast array of possible theories they picked a few which they considered themselves equipped to test. Since the correlations they observed are candidly described by the authors themselves as "weak" we may consider it quite likely that the yet undiscovered causative factor was not included among the theories they tested. Nevertheless, we must be grateful to the authors for supplying data which should dispose of a few old canards such as the belief that fear is responsible for the therapeutic effects of electroshock therapy. The authors state that fear of shock seemed to be universal in the patients they studied; yet only 3 patients, or 14% of their 21 shock-treated patients, comprising 8% of the 36 patients in their entire series showed a first-class degree of improvement. A second-class degree of improvement was shown by 7 or 33% of their 21 shock-treated patients as well as by 6, or 40% of their nonshock-treated patients. None of the nonshock-treated patients achieved the top grade of improvement distinguished by the authors.

They believe that their observations, though few in number, reveal some confirmation of the predictive value of the Funkenstein test. This had been well established previously by other authors on the basis of much larger series of patients. In this connection, it is of interest to note that most of the authors' cases fell into Funkenstein's groups I, II and III, which are comparatively poorly responsive to conventional electroshock as compared with group VI which is the most strikingly electroshock-responsive group. It would seem to me to have been much better to carry out an investigation of the therapeutic components associated with improvement by ECT in a selected group of type VI patients rather than in a chronic patient population characterized by autonomic reaction patterns stigmatizing these patients as relatively unresponsive to electroshock therapy.

Although I myself introduced the name Funkenstein Test into the literature in 1953, and still retained this name parenthetically in my paper in the *Archives of Neurology and Psychiatry* in 1955, I now consider, in agreement with Funkenstein himself, the simple name adrenalin-mecholyl test preferable.

It is hoped that future observations by these authors either in an expanded or more specifically restricted case material will yield definite and statistically validated conclusions worthy of the thoroughness and effort with which so many different functional systems—neuropsychiatric, physiological, psychological, biochemical and endocrine—have been reviewed and tested in the present study.

DISCUSSION

ALEXANDER GRALNICK, M.D. (Port Chester, N.Y.)—The title of these papers immediately indicates that a distinction is drawn between therapeutic components and factors associated with improvement which are not necessarily therapeutic. The authors consider the therapeutic components to be both psychological and physiological. I shall try to confine my remarks to the psychological aspects of the question.

The authors seem to agree with prevailing opinion that the therapeutic psychological factors are (1) fear of the treatment, (2) the satisfaction by shock treatment of a need for punishment that stems from guilt feelings, (3) the fear of death provoked by the treatment.

Their plan of investigation to determine the degree to which physiological and psychological factors are related to the effectiveness of shock seems to be a sound one. Their choice of the 3 hypotheses to test is good, and their method ingenious.

However, it seems regrettable that the patients chosen for the study were restricted to chronic schizophrenics, half of whom were readmissions, and some of whom, it is implied, may have received shock treatment on a previous occasion. I would think that results in such a study would be more uniform, more clearly defined, and more easily and confidently evaluated, if the patients chosen were more homogeneous diagnostically, acute cases rather

than chronic, in their first attack, better motivated, and more capable of meaningful insight. It would seem that such patients would respond better to the test situations, and through a better grasp of the reality situation provide more reliable responses to significant questions. Such patients, too, would give a clearer idea of their psychological reactions to the treatment.

I would say that it was unfortunate that individual psychotherapy was not administered as part of the study, if only for the purpose of having a fuller opportunity to determine the psychological make-up and reactions of the patients. Our investigations at High Point Hospital with the adjunctive use of shock therapy in psychotherapeutic treatment atmosphere, indicate that individual psychotherapy is feasible in such studies, and can be of great help in furnishing an understanding of the psychological factors involved. It permits delving into the deeper layers of the personality which have to do with the response to shock treatment.

I am struck by the finding that the determination of general fearfulness by means of tests does not precisely measure the same thing that clinical evaluation does. Whereas clinically determined fear is weakly associated with a higher rate of improvement, test-determined fear is more strongly associated with a higher rate of improvement. Such findings may indicate the importance of the psychiatrist's interpretation—or misinterpretation—of what he sees in the patient. It might indicate the psychiatrist's projection of his own fear, or his belief that the patient should or must be afraid of this shocking procedure. This is to say, that in trying to determine the psychological factors involved for the patient one may not lose sight of the psychology of the psychiatrist administering the treatment. For instance, the authors have the impression that fear of shock treatment is universal. As a result of our experience with shock treatment we have quite a different impression.

Contrary to general belief the authors find that fear of shock, determined both clinically and by test, is only weakly associated with improvement. However, it is a significant fact that patients who feared death from the treatment, whether they actually received ECT or not, seemed to do better than patients who did not. The authors indicate that there seem to be some relationships between the fear of treatment and improvement, but that their evaluation is difficult. I would suggest that such evaluation will not be possible until psychotherapy is done coincidentally in order to determine the intricate relationships involved. Such study will also be able to evaluate the more occult attitudes toward treatment, and the person who administers it, compared with which fear of treatment is a relatively simple emotion.

The probability—if not the fact—that more than just the surface symptoms of depression or fear are involved in the improvement noted with shock treatment, would seem to be substantiated by the study. The authors state that, while there is some relationship between fear of shock and improvement, it is not strong enough to explain adequately

the mode of action of shock treatment, nor is the fear itself a reliable prognostic tool.

We may surmise that fear, guilt-feelings, depression, anxiety, etc., are merely the surface symptoms produced by a variety of psychodynamic forces. It is these latter forces—rather than their presenting symptoms—that need to be determined and studied. It is these, I believe, that may more rightly be considered the psychological factors involved. Knowledge of these will help us to understand the therapeutic action of shock treatment—

at least from the psychological side. These are vastly more difficult to discover, and therefore pose a task compared to which the discovery of the significant physiological aspects may be relatively simple.

It is a matter of regret that the authors could not have reported on a larger series of cases, but this does not detract from the value of the study, nor from the trends it suggests, and the thought it provokes for improved studies, on the part of both the authors and others interested in the problem.

INSULIN TREATMENT OF PSYCHOTIC PATIENTS COMPARATIVE RESULTS WITH DEEP- AND LIGHT-COMA TREATMENT

LENORE BOLING, M.D., WILLIAM RYAN, M.A., AND MILTON GREENBLATT, M.D.^{1, 2}

Since insulin treatment was introduced by Sakel in 1933, it has been widely used but with limitations imposed by the technical difficulty, expense, and hazards of the treatment. There has been considerable variation in the methods of administration as well as in the results. Use of the method has been justified partly on the basis of the larger statistical studies which show a decrease in length of hospitalization and increased percentage of recoveries in certain diagnostic categories^(2, 4, 8), and partly on subjective impressions of therapists based on observations of individual patients.

Bourne⁽¹⁾ critically discusses the literature on effectiveness of treatment, considers the therapeutic factors in this form of treatment, and raises questions about the validity of the more favorable studies. Others^(3, 7) have cited experience to show that insulin treatment has no advantage over psychotherapy or environmental therapy. Some writers, e.g. Gralnick⁽⁵⁾, have speculated on possible psychological effects of insulin treatment and whether these might indeed be in part responsible for remissions. Others, e.g. Sakel⁽⁹⁾, have expressed the opinion that the metabolic or physiological changes produced by insulin coma are the significant factors in improvement. Along with this viewpoint goes the idea held by some^(2 and discussion) that the deeper the coma the more certain the favorable results. Support for this theory has been found in the observation that patients who recover from prolonged comas often have a complete remission of symptoms.

Sakel in 1954⁽⁹⁾ recapitulates his ideas on the manner and value of insulin therapy, reaffirming his conviction that the treatment must be individualized, the depth, duration, and number of comas being dependent on the

symptoms and needs of each patient. In most hospitals where insulin is now given in the United States, the treatment has been standardized to a considerable extent, but there is not complete uniformity. Authors of some of the larger studies on the results of insulin treatment illustrate this disagreement. Freudenberg, in his paper on Ten Years' Experience of Insulin Therapy in Schizophrenia⁽²⁾, emphasizes the necessity for "adequate treatment" while Gralnick in Seven-Year Survey of Insulin Treatment in Schizophrenia⁽⁴⁾ states that the number of treatments and comas bear no constant relation to results, good remissions being obtained with 15-20 treatment and few, if any, comas. Greaves *et al.*⁽⁶⁾ used subcoma insulin with favorable results. In some hospitals it is believed necessary to give deep comas (fourth stage) of long duration (up to an hour) in order for treatment to be effective, while at the other extreme we find the exclusive use of "subcoma" or "ambulatory" insulin in the belief that results with this method are good and the risk much smaller. Although the mechanisms of insulin coma and its effect on the brain as well as on other organs of the body are not completely understood, it is possible to investigate whether there is a clinical difference in results obtained by light *versus* deep coma. This study was designed, therefore, to compare the changes produced by deep insulin coma as opposed to treatment with light insulin coma.

METHODS

A total of 87 consecutive patients placed on the insulin list by the chiefs of the male and the female services at Boston Psychopathic Hospital between January 1954 and April 1955 were studied. Patients were assigned in alternation either to deep or to light coma treatment. Each of 73 patients received a full series of 35 comas; 14 patients had to be excluded from the study because they did not receive a total of 35 comas (the number

¹ From the Boston Psychopathic Hospital, 74 Fenwood Rd., Boston 14, Mass.

² We gratefully acknowledge the assistance of Mr. Alberto Di Mascio, M.A., in the statistical preparation of this material.

TABLE 1

**COMPARISON OF LIGHT AND DEEP COMA GROUPS
WITH RESPECT TO AGE, SEX, FAMILY HISTORY
OF MENTAL ILLNESS, DURATION OF ACUTE
STATE, TOTAL DURATION OF ILLNESS,
AND NUMBER OF TIMES ILL.**

	Light (39)	Deep (34)
Age	Ave. 28.4 yrs.	Ave. 28.9 yrs.
Sex	M 19 F 20	M 11 F 23
Family history of mental illness	20	15
Duration of acute state	Ave. 12 mos.	Ave. 15 mos.
Total duration of illness	Ave. 47 mos.	Ave. 50 mos.
Number of times ill..	Ave. 1.8	Ave. 1.7

selected for this study). The reasons for this were (1) early termination due to quickly obtained good results and reluctance of the patients' physicians to subject them to further risk and discomfort (2 cases); (2) intervention with additional EST or pharmacological or surgical treatment due to intolerable ward behavior (6 cases); (3) atypical reaction to insulin (4 cases); (4) patient's leaving the hospital without permission (1 case); (5) patient's becoming rapidly worse during treatment (1 case).

Thirty-four of the final 73 patients received deep and 39 received light coma treatment. Analysis of the 2 groups revealed no significant difference with respect to age, sex, family history of mental illness, duration of acute state, total duration of illness and number of attacks (see Table 1). They were also similar with respect to diagnostic categories, with one exception—namely, significantly more cases diagnosed schizophrenia, undifferentiated type were found in the deep coma group (see Table 2). Individual psychotherapy was administered concomitantly with insulin therapy to 60% of the deep coma

group and to 41% of the light coma group. This difference was found not to be statistically significant.

Deep coma, the type of treatment ordinarily used in this hospital, was defined as third stage coma, *i.e.*, absence of reaction to painful stimuli, presence of Babinski reflex and absence of lid reflex. Light coma was defined as early second stage and depended on the presence of disorientation sufficient to ensure that the patients could not tell the difference between the 2 types of treatment.⁸ In some patients this involved disorientation only and in others it was necessary to go far enough to produce twitching, motor activity, etc. Coma is ordinarily terminated at this hospital by means of tube feeding, and all light coma patients were tube fed at least part of the time. Patients were allowed to remain in coma for 30 minutes unless this was contraindicated by increasing depth of coma or by respiratory or other difficulties. All patients were treated alike in every other respect. Only the insulin personnel knew which patients were receiving light and which deep coma; this information was not transmitted to the patient's doctor nor to ward personnel.

Evaluation of the patient's clinical and psychological status before and after treatment presented the difficulties encountered by most investigators in attempting to obtain objective and quantitative data about psychiatric patients. Three measures of change were used based on observations before and after treatment: (1) clinical evaluation by the chief of service—at the end of treatment the chief of service was asked whether he thought the patient had improved clinically and was asked to grade the results as Good or Poor; (2) evaluation of ward behavior by the head nurse—a ward behavior sheet was filled out by the head nurse on the patient's ward. This contained 20 clinical categories of description of patient's thinking, affect or behavior (hallucinations, delusions, ideas of reference, combativeness, destructiveness, verbal hostility, irritability, restlessness,

TABLE 2

**COMPARISON OF LIGHT AND DEEP GROUPS WITH
RESPECT TO DIAGNOSTIC CATEGORIES**

	Light	Deep
Schizophrenia, paranoid	19	14
Schizophrenia, undifferentiated	6	11
Schizophrenia, catatonic	6	2
Schizophrenia, affective	4	3
Schizophrenia, mixed	2	3
Schizophrenia, hebephrenic	1	0
Schizophrenia, simple	1	0
Paranoid state	0	1

⁸ All insulin patients attended group therapy 3 times a week. In the capacity of observer one of the authors (L. B.) found no evidence that the patients were aware of a difference in type of coma treatment given.

talkativeness, resistiveness, motor activity, fearfulness, depression-elation, food intake, cooperation, self-care, sociability, initiative, productivity, sleep). These were scored within a range of +2 to -2 with zero as the norm, +2 being a markedly abnormal exaggeration of the characteristic and -2 being a markedly abnormal diminution or absence of the characteristic. The score was summarized for each patient by adding up the total number of deviations from "normal" behavior. The total change in the direction of normal was considered a measure of behavioral improvement. (3) Evaluation by Rorschach test—a Rorschach test was done on all cooperative patients. Forty-one patients, 25 from the deep coma group and 16 from the light coma group, were given the Rorschach test before and after treatment. All posttreatment tests and all but 3 pretreatment tests were administered by the same psychologist, who also evaluated changes in the Rorschach protocols. The psychologist was given no information regarding type of treatment and he had no knowledge of the case history. Five evaluation measures were derived from the Rorschach data. In this paper, the results of only one of the evaluations is presented, namely the global evaluation of improvement or nonimprovement based upon the subjective judgment of the psychologist. Relationships between the 5 Rorschach evaluations and the clinical methods of evaluation are discussed in another paper (10).

In addition to the above immediate postinsulin evaluation, a follow-up study was conducted in July and August 1955 (3-18 months after the completion of treatment), in the course of which contact was established with all patients or their relatives. Many patients received some further treatment (EST, pharmacological, surgical) after insulin and therefore the follow-up clinical condition could not be ascribed only to the original insulin therapy. However, since the 2 groups were comparable as to the number of patients who received additional therapy an over-all comparison of the 2 groups with respect to long-term outcome was also made.

FINDINGS

Although there was not infrequently a difference in assessment of a given patient ac-

cording to the technique of evaluation, by all measurements made in this study no significant statistical difference was found between the light and deep coma patients. (1) The clinical evaluation by the chiefs of service showed 64% improvement in the deep coma group and 65% improvement in the light coma group. (2) According to the behavioral evaluation by the head nurses on the patients' wards, there was an average number of points toward improvement of 6.7 in the deep and 6.9 in the light group. (3) According to global evaluation of the Rorschach protocols by the psychologist, out of 41 total cases tested (25 deep and 16 light coma patients), there was improvement in 68% of the deep coma group and in 68% of the light coma group.

The comparability of the 2 groups as to immediate improvement, discharge from hospital, and number in the community on 3-18 months follow-up can be seen in Table 3. Again there was no statistical difference between the 2 groups.

There is suggestive evidence that patients who have been long and repeatedly ill (*i.e.* with a poor prognosis to begin with) may stand a better chance of improvement with deep coma treatment, whereas light coma may not benefit them. In no case did any of the 5 patients sick more than twice improve with light coma; whereas of 22 patients who improved with deep coma, 4 had been ill more than twice (out of 7 patients ill more than twice). No patient ill longer than 5 years (7 patients) improved on light coma; of 10 patients ill longer than 5 years, 6 improved on deep coma. Of 5 acutely ill for over a year,

TABLE 3
CLINICAL RESULTS OF "DEEP" AND "LIGHT"
INSULIN COMA TREATMENT

	"Deep" coma (34 cases)	"Light" coma (39 cases)
1. Clinical improvement with insulin Rx, Psychiatric assessment	22 (64%)	25 (65%)
2. Patients discharged		
a. Without other Rx.....	12 (35%)	11 (28%)
b. With other Rx.....	13 (38%)	20 (51%)
Total	25 (73%)	31 (79%)
3. Patients in community on follow-up (3-18 months)	14 (41%)	20 (51%)

only one improved with light coma; whereas of 11 acutely ill for over a year, 5 improved with deep coma.

DISCUSSION

The experience obtained in the present study based on clinical and Rorschach indices indicates that there is no difference in the results obtained with light and with deep coma treatment. However, in view of the observations regarding the very ill patients who benefited from deep coma it cannot be said that deep coma has no advantage over light coma. The question of relative risk must nevertheless also be considered. Of our 4 patients who had untoward reactions to the treatment, 3 were in the deep coma group. The fourth patient, a member of the light coma group, had a delayed awakening after receiving 20 units of insulin on a morning following a weekend of heavy alcohol intake.

In addition, the results of this study imply that frequent benefit may be obtained from subcoma levels of insulin. Patients who have previously been considered physically unfit for insulin treatment may be given lighter doses with hope of improvement. The fact that depth of coma apparently is not a significant element in the therapeutic effect leads to further speculation as to what factors do make the treatment of value. It would be interesting to follow this pilot study with one in which the patients are exposed to the psychological aspects of the treatment (*e.g.* com-

ing to the unit for treatment, being put to bed, watched over, fed, etc.) while only half of the group receive insulin.

SUMMARY

Of 73 psychotic patients treated with insulin, alternate patients received deep and light insulin coma therapy. The therapeutic results were evaluated in terms of immediate clinical and psychological improvement and follow-up study. By the criteria used in these evaluations, no difference was found between the results of light and deep insulin coma therapy.

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PROBLEMS RELATED TO THE PERSONAL COSTS OF PSYCHIATRIC AND PSYCHOANALYTIC TRAINING¹

HOWARD W. POTTER, M.D., HENRIETTE R. KLEIN, M.D., AND
DONALD R. GOODENOUGH, PH.D.²

Because of our long familiarity with psychiatric residents and postresidency students in psychoanalytic training, we have been interested for many years in how their activities during the training period and their subsequent professional careers are affected by the financial obligation they inevitably assume while undergoing training. Our particular concerns, some intuitive and some supported by personal observations, were as follows:

1. Is the psychiatric resident being pressured into private practice prematurely, or even concurrently with his residency training by his financial obligations?

2. If the psychiatric resident engages prematurely in private practice does this restrict his freedom of choice of future full-time careers in public hospitals and universities?

3. Does the establishment of private practice prior to the completion of training freeze trainees geographically and thus create a scarcity of psychiatrists in more distant communities?

4. Do the extraordinary demands on time and energy implicit in coping with costs of advanced training affect the optimal utilization of training resources and the maximum development of scientific interests and skills?

5. How is analytic training financed? Through supplementation of residency stipends, through gifts from family, loans from various sources, a wage-earning spouse, by private practice, or how?

6. What is the effect of being required to pay relatively high fees for personal analysis and later, for case supervision (control) on the trainee's later choice of professional activities, type of practice, and fees charged?

7. Do excessively high costs of advanced

training deter some, who might make a substantial scientific contribution, from undertaking it?

8. What are the effects of this excessive pressure on the personal health and welfare of students and their families?

Any postdoctoral training program in the medical specialties poses financial problems for the trainees since such training extends into that period of life when marriage, parenthood and other adult responsibilities prevail. However, psychoanalytic training compounds the problems in that: (1) The personal analysis of a psychiatrist lasts a number of years and represents a major financial outlay. (2) Formal training in psychoanalysis extends over a period of not less than 4 calendar years, and usually longer. (3) Formal psychoanalytic training is not available to most psychiatrists until the completion of psychiatric residency and seldom is any credit granted by psychoanalytic institutes for courses in psychoanalytic theory given in the residency program even when given by highly qualified teachers.

It is self-evident that residency training in clinical psychiatry poses no major problems of a financial order other than eking out a 3-year period of existence on a residency stipend with whatever minimal financial supplements the resident can muster, especially if he is married and has a family to support as well as himself. The picture gets complicated, however, when the resident reaches out for a personal analysis as the first lap on his way to formal psychoanalytic training and eventual qualification as a recognized psychoanalyst.

It might be entirely valid to ask "why all the franticness about psychoanalytic training?" since some of the outstanding psychiatrists in the country have had no such training and since most of the psychiatrists who are providing dependable services to the community at large and to tax-supported psychiatric hospital services are not analytically trained in a formal sense.

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² From the departments of psychiatry, State University of New York, College of Medicine, and Columbia University, College of Physicians and Surgeons, New York.

The reality remains, however, that psychoanalytic training has "caught fire." The analytically trained psychiatrist is the one who is sought by many university teaching centers, community mental health agencies, and the sophisticated public. This the psychiatric resident knows. There is a degree of factual basis in these realities since psychoanalytic theory is concerned with the *how* of mental functioning which provides the spring board for psychotherapy—the psychiatrist's major claim as a specialist.

There are, of course, some abstruse areas in this matter of psychoanalytic training. It is predicated upon the traditional plan that a personal analysis is essential and that complete analytic theory should be taught only in a formal psychoanalytic institute and to those so analyzed. Yet there are no data to indicate that psychoanalytic theory cannot be taught to and absorbed by all residents (1) within the psychiatric program, irrespective of whether they will be among the smaller group who will be selected for training in psychoanalytic therapy.

In June 1954 we decided to explore some aspects of training costs by gathering pertinent information for the preceding year from psychiatric residents and postresidency students in psychoanalytic training. We asked 28 psychiatric residency centers near psychoanalytic institutes and the 14 institutes then within the American Psychoanalytic Association to participate by distributing our questionnaires to their residents and/or students.

There were roughly 1,000 trainees available for study in the participating institutes and residency centers; we contacted about 900. Students were instructed to leave the questionnaires unsigned to insure maximum privacy for themselves and the training centers. This procedure made it somewhat difficult to determine the exact number of students contacted, since two questionnaires undoubtedly reached some—one, through their residency center, and one through their psychoanalytic institute. We can state, however, that the percentage of response was no less than 70% and perhaps considerably higher. Our report is based on information provided by this group.

DESCRIPTION OF SAMPLE

A total of almost 700 trainees returned the completed questionnaire, distributed al-

most equally among residents (335) and students enrolled in psychoanalytic institutes (349). Of the 46% of the resident group in personal analysis, two-thirds were concurrently enrolled in psychoanalytic institutes. In a previous study (1) in 1950 on another group of residents, it is striking to find that the same percentage of residents were in personal analysis. It is also noteworthy that the great majority of residents not in personal analysis or psychoanalytic training were hoping to secure it. The ultimate training choice which will be made by most residents under the current system must be kept in mind in considering training costs.

RESIDENT SALARIES AND TRAINING EXPENSES

In viewing salaries usually paid by residency centers, it is clear that a resident may barely support himself and his family, but most definitely cannot pay the current fees for personal analysis out of the residency stipend (see accompanying tables). In our data, over half of the residents who were having a personal analysis reported expenditures for this item which alone equalled or exceeded their salaries.

The median salary for all residents was about \$3,000 per year, although first-year residents generally were paid less and third year residents somewhat more than this figure. The median expenditure obligated by residents for personal analysis was also about \$3,000 per year although the upper limit was \$4,500-\$5,000 per year. About 9 of every 10 residents and postresidents were charged \$15 or more per analytic session and about 40% paid an analytic fee of \$20 or more. Only one of 10 paid under \$15 per session. Differences in analytic fees for residents enrolled in analytic institutes and residents who were not regularly enrolled students in institutes were small. Since supervised (control) analysis by students is a later step in psychoanalytic training, not many of the residents were yet involved in this phase. However, those who were doing supervised (control) analysis were generally paying their supervisory analyst about the same fee as for their own personal analysis. In only a few institutes are these supervision costs covered by tuition. Tuition for psychoanalytic courses is an additional cost item, ranging up to \$800 or \$900 per year.

The median living expense for all residents was roughly \$4,000 a year, a figure reflecting not a particularly high standard of living considering the fact that three-quarters of the students were married and half had children to support.

These findings highlight the basic problem facing the psychiatric resident who is interested in obtaining analytic training. His options are these:

1. He may choose to start his training while still in residency, but if he does this he must find some additional financial resources, since residency salaries cannot suffice.

2. He may choose to delay his training until he has finished his residency but this creates other problems.

3. Despite his interest, and perhaps potential, he may have to forego psychoanalytic training.

Now let us consider the resident who decides to begin his personal analysis. How does he supplement his residency salary in order to finance it? Parenthetically, we point out the obvious—his residency carries with it a full-time commitment and a full-time opportunity for learning and maturing.

Savings.—It is the unusual resident who has enough savings to carry him through. In our sample fully two-thirds of those in personal analysis expected to be in debt by the end of their residency. About half of the residents were fortunate enough to be the recipients of gifts, subsidies, or grants, but even for these, the median income from these sources was only between \$1,500 to \$2,000 for the year. These sources also included the G.I. Bill of Rights for some students, a subsidy which cannot be counted upon in future planning. It is clear that, except for a minority, to finance a personal analysis the resident must have an extra income.

Income from Private Practice.—We were interested in the extent to which residents engaged in private practice and inquired about earned income from sources other than a salaried position. Comments by the residents as well as statistical analysis of the relationship between responses to this question and other variables give us some confidence that there were some earnings from private practice, at least in the large majority of cases. Since it is the policy of all residency centers to forbid residents' engaging in

private practice, we assume that the income from private practice is underestimated in our data.

Nevertheless, our data indicate that at least 2 in 5 and in some areas 3 in 4 third-year residents in personal analysis or psychoanalytic training are engaged in private practice. Some reported very little private practice income during the first years of residency but one-quarter of those in analysis reported over \$3,000 per year from such practice. By contrast, only about one-fourth of the residents not in personal analysis were engaged in private practice and they usually earned much less from this source. This conspicuous difference in private practice income of residents in personal analysis, despite the far greater demands upon their time, and residents not in analysis, is explained essentially by their far greater need to meet the burdensome costs of this additional training.

Not only is there the grave question of whether a resident who is still in psychiatric training is prepared for independent practice, but even more important is how this deflection of time, energy, and interest may interfere with his securing the maximum benefits from residency training and fulfilling his optimum service obligation to the psychiatric center. If the resident turns to private practice to secure funds, it means he must carry out his obligations to psychiatric programs by day and spend all or almost all so-called free time conducting private practice. With such a schedule he cannot easily give his undivided attention to the residency program and the maximum acquisition of psychiatric skills.

For example, one of our subjects wrote:

Since I started my residency, I have always been able to stay on a pay-as-you-go basis. This has been by dint of long hours of overtime work. As a result, my indebtedness has not increased, although the diameter of my coronary arteries may have decreased. There is some question as to the usefulness of such a persistently heavy schedule for my professional growth.

And another subject stated:

I had no one to borrow from and instead worked about 38 hours a week besides my time in residency in order to pay for living and psychoanalytic training expenses. Although I feel my starting psychoanalytic training early definitely helped me get a great deal more out of my residency, I would have gotten even more from my residency if I could

have borrowed a few thousand dollars and not had to work such long hours.

Not all residents are eager to begin private practice; many would prefer additional psychiatric training first but find this economically impossible. One subject stated:

I had planned and had been accepted for two additional years of training in a psychiatric specialty which I wanted but gave this up for psychoanalytic training. I couldn't afford both.

That early private practice is utilized sometimes as a last resort and not by choice is described by another resident who wrote:

I have just begun taking private patients in order to earn enough to finance my analysis, having exhausted all known sources of loans.

Nor are these the only problems which may accompany premature involvement in private practice. Although the resident may begin practice as a "fire-fighting" measure, there seems to be a strong possibility that he will become "fixed" in his practice with a subsequent loss in geographical and occupational mobility. It is the rare individual who, having become established in private practice for whatever reasons, will move elsewhere and go through the same wear and tear in establishing himself in a new community. It is true there are some who have migrated to other areas, but usually to assume jobs of major significance. These are exceptional instances.

Income from Working Spouse.—A second important source of extra income for the resident is his spouse; about 3 out of every 4 residents were married. In 9 of every 10 childless marriages, both the resident and his spouse were working. There were only two cases in our entire sample of first- and second-year married residents without children who reported no income from their respective spouses, and in each of these cases, the resident reported a sizable independent income. In those families with children and the resident in analysis, 30% reported both spouses working. Among residents not in analysis, this occurred only half as frequently.

The long hours beyond those of the residency requirements for personal analysis or psychoanalytic training and for private practice, and the emotional burden of debts and concern about money affect the resident not

only directly but indirectly through the demands imposed on his family.

One resident reports:

I don't think these figures convey any notion of the degree of hardships and privations imposed on a family by this training.

Another states:

Unfortunately this questionnaire does not and cannot ask questions relevant to the wear and tear of living poorly or the emotional wear and tear by the deprivation on one's family.

From comments appended to the questionnaire, none of which had been sought, it was clear that starting a family or restrictions on its size is a direct consequence of financial deprivation.

One resident reports:

The residency of my choice pays very small stipends. In order to avoid debt I have delayed the start of a family, and my wife has earned the family income.

Another adds:

In our particular case it is likely to be either family or analysis in the next 6-8 years, for financial reasons.

Loans as a Source of Funds.—One additional financial device may be available to the resident; he may go into deficit financing of his training. Most of the residents in analysis do exactly this and many go heavily into debt. In our sample two of every three reported expenditures which exceeded their incomes and two of three expected to be in debt at the end of residency despite use of savings, gifts, spouse's salary and private practice. The median estimated indebtedness was about \$5,000.

POSTPONEMENT OF ANALYTIC TRAINING

It is not surprising to find so many students postponing advanced training when it is available or desired by them because they are unable to raise funds or to suffer the consequences of indebtedness. Some find it necessary to interrupt training.

For example, one student remarked:

I hope to start personal analysis soon after I obtain employment. I have no desire to go back into debt as I was prior to my military service.

Another reports:

I put off psychoanalytic training 2-3 years because of the expense.

Still another:

Am taking full-time salaried job (elsewhere) to pay for analysis next year. Shall return to complete it.

Another:

I have discontinued my analysis until I enter (private) practice in order to have enough money to meet the expenses.

Those who begin their analytic training after the completion of residency are taking a more conservative course financially. This action, however, creates its own problems: the late age of the learning period, the late age for the completion of training and for development of independent professional feelings and attitudes, the reduction in the projected length of careers as trained specialists, and the increased tendency to lose geographic mobility.

In our sample over one-fourth of the advanced analytic students were over 40 years of age and about two-thirds were over 35. One must add to these figures the number of years still necessary before psychoanalytic training will have been completed and the additional years necessary for membership in an organization which implies specialization.

The advanced age of the trainee generally cannot be explained by a delay in beginning training or a late choice of specialty. Although a small group were so delayed through military service, over three-fourths of the first-year residents had been out of medical college only 1 or 2 years before starting their psychiatric training and only in rare cases was this lapse of time sizeable.

For most, the late age at which we find them still in psychoanalytic training can be explained by the current operation of that training since analytic training is completely separated from residency training. This system increases the likelihood that certain students will have to complete their residency before being able to begin even the personal analysis. Also, since the analytic institutes, with few exceptions, operate as night schools, the length of the training period inevitably is increased. Contributing to the extended period of training is the lack of integration of psychoanalysis and psychiatric training. Half the advanced students

who were still in analytic training had been out of medical college for 9 years or more.

REDUCTION IN GEOGRAPHICAL MOBILITY

One grave consequence of such extended training is that the student first gravitates toward areas which provide this special training and is obliged to remain in the vicinity of the psychoanalytic institute in order to complete training. By that time he usually is established in private practice in that community. Thus the personal needs of the analytically trained psychiatrist forces him to remain in the area, although it in no way explains this phenomenon entirely. Rarely do they at the age of 35 or 40 attempt to re-establish themselves and their families in new locations even though the need for their services elsewhere may be greater.

As one trainee puts it:

Under present circumstances men must leave their place of work and take up residence in New York, Philadelphia and such if they wish to obtain training. The great expense and the length of time [involved] render it unlikely that they [will] return to their original institution or city.

Another trainee comments:

Psychoanalytic training takes so long that one has to settle in the highly competitive areas about psychoanalytic institutes.

We are mindful that a financial problem may well reflect personal difficulties and that biases may creep into a survey such as this, where the financially secure student may not be as inclined to respond to the questionnaire as the financially insecure one. But even when these influences are soberly considered, the reality of the magnitude of the various problems confronting the trainee—over which he has little control—is impressive.

Setting aside the desirability of the resident's having sufficient time and singleness of goal to allow him to become well-steeped in psychiatric training with full opportunity to develop appropriate interests in methods, research, community work and academic interests, what are the general expectations of how the resident who desires personal analysis and psychoanalytic training can secure it? Unless a resident postpones personal analysis and analytic training until he has completed his residency, how is it to be financed? Although most residency centers

TABLE 1
YEARLY INCOME OF PSYCHIATRIC STUDENTS BY TYPE OF STUDENT* AND SOURCE OF INCOME

	Percentile	Salaried positions	Earned: other than from a salaried position †	Spouse	Subsidies, gifts, etc.	Total
Not in analysis (Total N = 182)	N	178	46	51	63	180
	25	\$1,500	\$500	\$1,500	\$500	\$7,500
	50	3,000	1,000	2,500	1,500	4,000
	75	3,500	1,500	3,500	2,000	5,500
In analysis	N	57	20	16	32	56
Residents (not enrolled in analytic institutes)	25	1,500	500	500	1,000	3,000
	50	2,500	1,000	1,500	2,000	4,500
(Total N = 58)	75	3,500	1,500	3,000	3,500	6,000
Enrolled in analytic institutes	N	89	46	24	45	90
	25	2,000	1,000	1,000	1,000	4,000
	50	3,000	2,000	2,000	2,000	6,000
	75	4,000	3,500	3,500	4,000	9,000
Analytic students	N	231	252	66	70	334
Residency completed	25	4,500	4,000	2,000	1,000	10,500
	50	7,000	11,000	3,500	1,500	15,500
(Total N = 349)	75	\$10,000	\$18,500	\$7,000	\$3,500	\$20,500

* The number of cases presented in this and the following table are usually several fewer than the total number of students responding in each class since some of the students gave ambiguous responses or failed to respond to one or more questions.

† The number of cases presented for each income, expenditure and indebtedness category includes only those students who reported such income, etc. These are the N's upon which the percentiles are based.

TABLE 2
YEARLY EXPENDITURES AND ESTIMATED INDEBTEDNESS OF PSYCHIATRIC STUDENTS BY TYPE OF STUDENT AND EXPENSE

	Percentile	Tuition	Personal analysis	Control analysis	Living expenses	Total expenses	Estimated indebtedness	
							Beginning of residency	End of residency
Not in analysis (Total N = 182)	N	—	—	—	176	175	65	70
	25	—	—	—	\$2,500	\$3,000	\$500	\$1,500
	50	—	—	—	4,000	4,000	1,500	3,000
	75	—	—	—	5,000	5,000	2,500	5,500
In analysis	N	—	56	—	55	57	13	35
Residents (not enrolled in analytic institute)	25	—	2,000	—	2,500	4,500	1,000	3,500
	50	—	3,000	—	3,500	6,000	2,000	6,500
	75	—	3,500	—	5,000	7,000	4,000	9,000
Enrolled in analytic institutes	N	29	75	—	87	85	33	57
	25	\$200	2,000	—	3,500	5,500	1,000	2,000
	50	400	3,000	—	4,500	7,500	2,000	4,500
	75	800	3,500	—	6,500	9,500	3,000	\$8,000
Analytic students	N	224	264	160	310	303	63	—
Residency completed	25	300	2,500	\$700	7,000	10,000	1,000	—
	50	400	3,000	1,000	10,500	13,500	2,000	—
(Total N = 349)	75	500	3,500	\$1,500	\$15,000	\$18,000	\$3,500	—

forbid private practice throughout the residency period, apparently a large number of residents are in private practice.

If private practice is forbidden but personal analysis attained does this mean that only those residents with private income or funds will be privileged to begin this post-graduate training since residency salaries cannot finance personal analysis? If, on the other hand, the resident should postpone his personal analysis and analytic training, what about the consequent problems? Whatever the merits of life experience and maturity, it is startling to contemplate the late age at which students receive their basic training. In terms of personal pliability, acquisition of new skills, development of subsequent interests in public service and academic careers, mobility after training, reduction in the length of a productive career life after final certification has been achieved, significant long-range personal and professional effects with a bias in the direction of the profit motive rather than service, seem inevitable.

Various policies for consideration are: (1) long-range planning of training in clinical psychiatry and psychoanalysis with budget-

ing of time, energy and interests; (2) student loans and career grants; (3) control of fees for personal analysis of trainees and the use of tuition for supervisory costs; (4) integrated training in psychiatry and psychoanalytic medicine; (5) use of supervised private practice as part of residency training; (6) the assuming of the major financial cost of training by the medical college or hospital through use of part and full-time staff psychoanalysts.

Although we do not agree with the student who wrote, "a person has to be practically abnormal to want to spend this amount of time and money getting the training," we do believe that these personal reports from almost 700 trainees provide the basis for sober assaying of current trends and practices. How their problems can be met is a matter of planning, definition of policy and creation of necessary resources, for the most constructive development of our discipline and for the trainee.

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MOTOR HALLUCINATION: SOME MOTOR ASPECTS OF MENTATION

MAX LEVIN, M. D.¹

In motor hallucination the patient imagines he is making a voluntary movement when really he is not. The object of this paper is to consider some aspects of this type of hallucination.

Two cases are presented. They have this in common: the hallucination pertained to speech; each patient thought he was speaking when he was not. Beyond this they are in sharp contrast, for in one case the disturbance was peripheral (*myasthenia gravis*) while in the other it was central (*schizophrenia*).

CASE 1.—A man of 40 with *myasthenia gravis* had, among other symptoms, attacks of aphony brought on by laryngeal fatigue. Thus he would speak normally for a minute or two and then his voice would die out "gradually but quickly." He often thought he was still speaking audibly when he was not, and would wake up to this fact when the people he was with failed to respond to what he thought he had said. Several times he asked the waitress in the restaurant for something, and was surprised to learn she had heard nothing.

CASE 2.—A girl of 16 was admitted to a mental hospital in a catatonic stupor and made a complete recovery. Ten years later, now the mother of a 6-year-old child and pregnant again, she was seen in consultation because she was concerned as to whether she would be able to handle a second child and her physician asked if a therapeutic abortion was indicated.

She remembered her stupor clearly. She remembered that at times "I thought I was talking but I wasn't." For example, one day her sister and some other girls visited her at the hospital, and they were all sitting together in the hall not far from a water cooler. The sister, Frances, remarked that she wanted a drink, but did not know where the cooler was. Referring to the cooler, the patient, who was mute, said, or rather *thought* she said, "It's over there, Frances, and you just press the button." She was puzzled that Frances made no response, and finally she got up herself and brought Frances a drink of water. After her recovery she and Frances remembered this incident and Frances recalled clearly that the patient had said nothing whatever.

¹ From the department of neurology and neurosurgery, The New York Medical College, Flower and Fifth Avenue Hospitals, New York City.

These two patients had motor hallucinations but otherwise they differed profoundly, and the cases will be considered separately.

Case 1 is simple. The highest cerebral centers initiate the act of speech; they "issue orders" to lower motor centers. His highest centers having issued these orders, the patient thought he was speaking. A man knows he is speaking, not just because he hears his own voice, but also because he is innervating his speech apparatus, albeit ineffectively as in Case 1. The case shows that our judgment of reality is based in some degree on events in our higher centers, events that sometimes do not tally with reality and will therefore lead us into false judgments. A good example is accommodative micropsia (micropsia in third nerve palsy). Owing to weakness of accommodation the patient must work harder to focus on a near object. With an object 2 yards away he must work as hard as if it were, say, 1 yard away, and he therefore feels it is just 1 yard away. But the area of retina stimulated corresponds to an object 2 yards away; hence he thinks the object is smaller than it really is. A man with a weak arm picking up an object would overestimate its weight.

Case 2 is more complex, because a psychosis is involved. Since psychotic patients hallucinate in other spheres as well, we must consider the general problem of imagery and hallucination.

Hughlings Jackson's formulation of the neural processes that underlie imagery will be useful to us. Jackson used the terms "vivid image" (as when we *see* an object) and "faint image" (when we merely *think of* an object). He said (2, Vol. 2, p. 69):

I suppose that I am seeing a brick. . . . What first happens is that there is a peripheral impression [upon the retina], impulses then pass through the lowest, through the middle, and up to the highest sensory centres. . . . So far we have only stated one half of the reflex action, have only reached the physical condition in the highest sensory centres correlative with the colour of the brick. It and all

other objects have shape, and this as much requires to be accounted for as the colour. The shape of an object is the relation of its several positions one to another; our knowledge of this relation is by movements, in this case ocular movements. . . . By currents passing from the highest sensory centres, so to speak, "across" to the highest motor centres, and from these downward, through middle and lowest motor centres to muscular periphery, there is development of movements of the eyeballs. . . . Here we have . . . reflex action.

Further on Jackson said (2, Vol 2, p. 70) :

The vivid image, the mental state we have [when we see a brick], arises during . . . the physical condition in the two divisions of the highest centres, and is strongly and definitely "projected," because the lower centres are engaged; it *seems* part of the outer world. Next day, we can think of the brick in its absence, have "an idea of it," or, as I prefer to say, have a faint image, where, yesterday, we had a vivid image. In this case the reflex action is incomplete and weak; the lowest and the middle sensory centres and the middle and the lowest motor centres are not engaged. The highest sensory and motor centres are alone engaged; there is still reflex action, but only the central links of the great sensorimotor chain are engaged; the central part only of the whole process which occurred in perception is done over again, and, the excitations being slight, the image arising is faint, and, the lower centres not being engaged, it is feebly and indefinitely projected, *seems* more part of ourselves. [On the other hand, when we actually see the brick] we have complete and strong reflex action, complete because all orders of centres, sensory and motor, are engaged; and strong, because the highest centres are in great activity.

Thus Jackson held that both vivid and faint imagery are manifestations of reflex action. Reflex action characterizes the highest cerebral centers no less than the lowest spinal arcs. This does not concern us here, however. What does concern us is the fact that a vivid image implies activity of all levels of the nervous system, while a faint image implies activity of only the highest.

The principles of imagery apply also to motor behavior. Besides moving we may merely think of moving, or as Jackson puts it, "have an idea of a movement." Concerning this matter he said (2, Vol. 2, p. 95, footnote) :

When I actually move my arm . . . there is a process from highest motor centres, through lower centres, then by nerves to some muscles. . . . This is a purely physical process. . . . When we think of the movement, or remember it (popularly 'have an idea of it'), the physical process is limited to the highest centres; the very same nervous arrange-

ments of the centres are engaged, but they are slightly engaged, and the physical state concomitant with the slighter process is faint.

Thus an "idea of a movement" is to an actual movement what a faint image is to a vivid image. In actual movement, as in vivid imagery, there is activity of all levels of the nervous system. By contrast, in "ideal movement," as in faint imagery, there is to all intents and purposes activity of highest centers only. I shall ignore the fact (not known in Jackson's day) that even in ideal movement there is some slight innervation of muscles. There are movements of the larynx even when one merely thinks of singing or speaking. Golla(1) recorded the movements of his larynx and found that when he merely thought of the notes of the octave he got a curve identical, save as to amplitude, with that obtained when he sang them.

INDEPENDENCE OF HIGHER AND LOWER LEVELS

Adaptation requires that the various levels of the nervous system be able, when necessary, to function more or less independently of other levels. Thus lower levels function automatically when we walk or drive a car while our minds are busy with other matters. The tabetic, whose lower centers are diseased, suffers from their inability to do their job independently; they require "assistance" from above; in order to walk he must put his mind on his legs and feet.

The highest centers too must be able, when necessary, to function independently, "without the aid" of lower centers. This capacity comes with maturity and is wanting in the infant. The immaturity of the infant manifests itself in two aspects of mentation.

In the sphere of *movement* immaturity is seen in the child's comparative inability to think silently. From his chatter one can tell what he is thinking. There is the story of the little girl who exclaimed, when told to think before she speaks, "But how can I know what I think till I hear what I say?"

In the sphere of *imagery* immaturity is seen in the child's relative inability to think without the aid of vivid imagery. A child has a favorite story which he loves to have

read to him. You can read it 10 times a day without boring him. He knows the story by heart word for word. If you omit a single word, or alter the sequence of words, he will call you sharply to task. Why then, since he knows the story by heart, does he want you to read it to him? It is because he enjoys thinking the story, and he can't think it without hearing it. The adult, by contrast, can think in the absence of stimulation.

SENSORY HALLUCINATION

The common sensory hallucinations of the psychotic arise, I suggest, from the fact that the highest cerebral centers, from fault or disease, have lost some of their capacity to function independently of lower centers (3, 4, 5). The psychotic *hears* what he would otherwise merely be *thinking*. The clearest example is "thought echo" or *Gedankenlautwerden*, in which the hallucination repeats verbatim the thought in the patient's mind.

The relationship of hallucinatory content to thought content is not always so clear. It may be obscured by the fact that the thought has been translated into symbolic terms. The best insight into hallucinations is gained from analysis of your own hypnagogic hallucinations, which can be related to the thought in your mind at the moment of falling asleep. As an example, I had examined a criminal and was contemplating the opinion I would present to the court. While falling asleep I pondered the question of determinism and free will. Growing very sleepy, I reflected that the question is insoluble. I then saw a wooden chest; it was closed and I knew it was locked and could not be opened because the key was missing. At that moment I woke up, which was fortunate for it enabled me to see the relation of the dream image to the thought in my mind a moment before. When one is awake and therefore capable of mentation on a higher and more abstract plane, one can think in terms of an insoluble metaphysical problem. In the reduced state of sleep these terms are translated into their concrete equivalent, a locked wooden chest to which there is no key.

MOTOR PHENOMENA

So much for imagery. When loss of independence of the highest cerebral centers manifests itself in motor phenomena, there are several possibilities. In the first place, the patient may be unable to think silently. He will think out loud, like the demented persons who walk the streets talking to themselves.

CASE 3.—A high school teacher of 37 emerged from a catatonic stupor and became for a time very nearly normal mentally. During this period of relative normality she recalled that the 4 days that followed her emergence from the stupor were "horrible." In these 4 days she was overtalkative. "I had no speech control. It seemed as if I couldn't *think* things, but could only *say* them. There was a great fear in my mind that I would never again be able to think without speaking, and I thought how horrible it would be to have to go through life that way."

In manic excitement too, silent thought is relatively impossible. The patient's thoughts pour out of his mouth.

Lindemann (6) reported the effect of amytal on 6 normal subjects. Under the influence of the drug the following statements were made: "It's funny I am just telling you things which I wasn't going to tell you. . . . No matter what comes to my mind it wants to be expressed too. . . . I feel like saying all sorts of things. The words kind of just come out of my mouth. . . . The words just go rambling on my tongue."

In the second place, the patient may confuse unspoken and spoken speech. He may think he is speaking when he is only thinking (as in Cases 1 and 2), and *vice versa* he may think he is *thinking* when really he is *speaking*. This last is seen in Case 4.

CASE 4.—A schizophrenic woman of 33 was getting an insulin shock treatment. Two hours after the injection she was still conscious when the nurse came and arranged her bedclothes and tucked her in. The patient murmured to the nurse, "You're pretty, you're pretty, you're pretty." The nurse smiled. The patient later went into coma. When she came to, she was asked to recall her last thoughts before the coma. She recalled that the nurse was tucking her in and she was *thinking*, "Gee, you're pretty, you're pretty." She added that this was silent thought, and, seeing the nurse smile, she had wondered if the nurse had guessed what she was *thinking*. When told she had actually

said these flattering words, she was amazed and thought it a huge joke on herself.

In automatic states in epilepsy and after cerebral concussion patients may do things which afterward they do not remember. Since deviations from the normal occur in all grades of severity, one would think there are some intermediate cases in which the amnesia is not so complete, the patient remembering his actions as if in a dream, being unsure whether he actually performed them or only dreamed them. I remember no such observation but venture to think that cases of this kind do exist. Normal persons too may confuse actual movement and ideal

movement. A man may remember that the other day he either mailed a letter or *thought* of mailing it, he's not sure which.

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DISPOSITION OF FIRST ADMISSIONS TO A PRIVATE PSYCHIATRIC HOSPITAL, 1920-1951¹

HAROLD H. MORRIS, JR., M.D., AND MANLY Y. BRUNT, JR., M.D.²

Until the twentieth century was well under way, clinical psychiatry and psychiatric treatment were practically synonymous with psychiatric hospital experience. The psychiatrist operated almost exclusively within the walls of an institution. It was not by accident that the founders of what was to become The American Psychiatric Association were hospital superintendents; they *were* the psychiatrists. For several decades the number of psychiatric beds in this country has been steadily increasing, yet it must be apparent to everyone that expanding hospital construction is only a part of the problem of helping our mentally ill. The kinds of services the hospitals have been supplying have changed tremendously, but even these great changes and expansion of function have not kept pace with the growing demands for psychiatric services. Each year a smaller percentage of physicians specializing in psychiatry are confining their activities to hospitalized patients, and no one will disagree that if a patient can be cared for and treated outside a hospital, there is great saving, not only in direct cost of care and treatment but also in many indirect ways.

Several recent reports have given an excellent statistical picture of what is happening to the population of mental hospitals (3, 4, 5, 6). For the first time in recent history, the New York and Kansas state hospital systems report a drop in admissions and bed occupancy. Various factors have been suggested to account for this, but it is too early to assess the significance of these findings; whether they really mark the beginning of a new era or whether for some unexplained reason the last reported years have been exceptions to the general trend.

Most of these reports concern large samples of patients and take into account only

readmissions to the same hospital or system. At the Pennsylvania Hospital we are in a position to review the experience of a comparatively small hospital (220 beds) where there has been no marked change in policy concerning the admission and discharge of patients since 1920 (1, 2).

During the period under review, 1920-1951, there has been no significant change in the number of patient beds, and the rate of first admissions has hovered rather steadily around 330 per year. Rather than review the entire hospital experience of these 32 years, covering about 10,000 individuals, we limit our consideration to 4,000 cases. This report concerns 1,000 consecutive first admissions to the Pennsylvania Hospital during each of the following periods: 1920-22, 1930-32, 1940-42, and 1949-51. (The period 1949-51 was chosen for the last group in order to complete 5-year follow-up studies, which would not have been possible if we had chosen the years 1950-52.)

The patients selected were followed for 5 years from the time of their first admission to any psychiatric hospital. Sex, age at time of initial admission, diagnosis, the number of suicides and deaths from other causes within the first 5 years were recorded. Each patient's psychiatric hospitalization status at the following intervals from time of original admission was established: 1 month, 6 months, 1 year, 2 years, 3 years, and 5 years. Patients were considered to be chronically hospitalized if they remained in hospital the entire 5 years; direct transfers from one psychiatric hospital to another were considered single admissions. For example, the following case would be considered chronically hospitalized: patient A is admitted for the first time to hospital Z. After 6 months at hospital Z, he is moved to the Pennsylvania Hospital, where he remains for the next 4½ years.

Readmission rates were also calculated, on the following basis: any return to a psychiatric hospital within 5 years of the original admission provided that release from the

¹ Read at the 112th annual meeting of The American Psychiatric Association, Chicago, Ill., April 30-May 4, 1956.

² Authors from the staff of the Pennsylvania Hospital, department for mental and nervous diseases, 4401 Market St., Philadelphia, Pa.

hospital was with the consent of the staff and immediate return or transfer was not expected. Visits outside the hospital with the intention of return or transfer are not recorded as readmissions.

Table 1 records the number of deaths, suicides, and patients remaining chronically hospitalized during the 5-year period for each Group of 1,000 patients. Deaths and suicides are recorded whether they occurred in the hospital or at home. Chronic hospitalization may cover residence in more than one hospital. There has been a steady decrease in mortality rates, with a levelling-off in the last 2 decades. Among the major factors influencing the mortality rate are the introduction of fever therapy for paresis in the late 1920's, chemotherapy in the late 1930's, the antibiotics in the early 1940's, and constantly improving standards of nursing care throughout the whole period. The development of specifics for paresis (fever, chemotherapy, and antibiotics) seems to have had as much effect in decreasing the mortality rate as any other single factor. In Group I, 64 admissions were diagnosed paresis, and of these, 42 died within 5 years of their first hospitalization. In Group IV, there were only 2 admissions for paresis, and neither of these has died.

From our figures, there does not seem to be any definite trend in the suicide rate since 1920. Most of the suicides were in the diagnostic categories included under the functional psychoses; the widespread use of insulin coma and electroshock therapies for these patients in the last 2 decades apparently did not influence the suicide rate to any marked degree.

Since 1930, there has been a rather steady decline in the number of patients chronically hospitalized. As factors influencing chronicity rates are more varied and complicated than those affecting mortality rates, it is not

TABLE 1
DEATH, SUICIDE AND CHRONICITY RATES

	Group I (1920-32)	Group II (1930-32)	Group III (1940-48)	Group IV (1949-51)
Deaths, excepting suicide.	195	171	106	105
Suicide	21	19	26	20
Chronically hospitalized ..	88	120	72	52

possible to sum them up as simply. Table 2 *et seq.* attempt to shed more light on the declining figures for chronicity.

Table 2 shows the number of patients released from their first admission for reasons other than death following various lengths of stay, and the percentage of those released who returned to a psychiatric hospital within 5 years of original admission date. The numbers are cumulative; for example, in the first Group 551 patients were released within 6 months. The figure 551 includes the 163 patients who left within the first month plus 388 patients who were released some time between the first and sixth month of their original admission. The readmission rate is calculated as a percentage of the number discharged; *i.e.*, of the 551 patients in Group I released within 6 months 38.5% returned to a psychiatric hospital within 5 years from the time of their admission.

Table 2 also shows that more patients are spending less time in the hospital during their first admission: 163 from Group I left within one month, while 265 were released during a corresponding period in Group IV. Despite the tendency toward shorter initial hospitalization, the readmission rate has not changed appreciably. For example, considering the patients from each Group that left within 6 months, it can be seen that the readmission rate has remained rather constant at about 38%, with the exception of Group II, in which only 30.8% returned. In Group II as a whole, readmission rates are consistently lower than in the other 3 Groups. We are unable to account for this

TABLE 2
NUMBERS RELEASED AND PERCENTAGE READMITTED

	(1920-32)	(1930-32)	(1940-48)	(1949-51)
Left within 1 month..	163	182	166	265
% readmit. in 5 yr....	32.7	24.1	44.6	37.7
Left within 6 mo.....	551	562	708	754
% readmitted	38.5	30.8	37.6	38.6
Left within 1 yr.....	660	685	812	834
% readmitted	37.0	30.1	37.1	38.3
Left within 2 yr.....	717	747	838	863
% readmitted	36.0	30.3	37.2	37.8
Left within 3 yr.....	766	766	847	878
% readmitted	34.2	30.3	37.2	37.4
Left within 5 yr.....	781	775	855	887

TABLE 3
RESIDENTIAL STATUS

Time interval since initial admission	(1920-22)	(1930-32) (Percentage of survivors given in parentheses)	(1940-42)	(1949-51)
1 month	808(83.1)	791(81.3)	817(83.1)	724(73.2)
Deaths within 1 mo.....	28	27	17	11
6 months	392(42.3)	396(41.8)	281(29.0)	266(27.6)
Deaths within 6 mo.....	74	52	47	38
1 year	329(36.4)	327(36.0)	233(24.9)	224(23.6)
Deaths within 1 yr.....	95	91	63	54
2 years	315(36.5)	247(28.0)	201(21.8)	203(21.9)
Deaths within 2 yr.....	138	119	79	74
3 years	282(35.2)	236(27.6)	211(23.4)	202(22.3)
Deaths within 3 yr.....	171	152	100	94
5 years	288(36.7)	243(30.0)	246(28.3)	194(22.2)
Deaths within 5 yr.....	216	190	132	125

difference precisely; it might be correlated in some way with the economic upheavals of the depression. Part of the difference in readmission rates for Group II is accounted for by the comparatively low readmission rate for those patients released within the first month, which has a considerable effect on the succeeding readmission rates.

Table 3 gives the hospital residential status of the 4 Groups on given anniversary dates from time of first admission. These figures are presented in terms of actual number of patients in residence on a given date, and also in terms of percentage of survivors. Since there were 1,000 members of each group originally, the number of survivors on any given anniversary date will be 1,000 less the number of patients who have died prior to that date. These figures show the effect of readmissions in maintaining hospital population at a given level, and confirm the findings of previous follow-up studies carried out at this hospital on smaller groups of patients. Some time between the second and third year following first admission, the maximum percentage of survivors of the original group living outside a hospital is reached. From that time on, there is

a near equilibrium between factors influencing release and readmission to the hospital. This equilibrium is maintained over a long period; we have found results to be substantially the same when a group of patients is followed for 30 years or more.

It is encouraging to note that over the past 4 decades there has been a steady decrease in the "hard core" of patients hospitalized on the 3- and 5-year anniversary dates. In Group I, this hard core consisted of nearly 36% of the survivors, while in Group IV it represented about 22% of the survivors.

Tables 4 and 5 give figures for admission, release, readmission and chronicity rates for the functional psychoses, which include the schizophrenias, involutional and manic-depressive reactions. They show the number of patients in each Group, the number and percentage released for reasons other than death within 5 years, the number and percentage of those released who were readmitted within 5 years of first admission, the number who were continuously hospitalized for 5 years following first admission, and the number of deaths occurring during first hospitalization within the 5-year limit. The functional psychoses have been divided into

TABLE 4
THE SCHIZOPHRENIAS

	(1920-22)	(1930-32) (Percentage in parentheses)	(1940-42)	(1949-51)
Number of patients.....	276	207	227	340
Released within 5 yrs.....	175(63.4)	134(68.4)	179(78.8)	298(87.1)
Readmit. within 5 yrs.....	88(50.3)	69(51.5)	85(47.5)	125(41.9)
Continuously hospitalized ...	87(31.5)	68(32.8)	40(17.6)	37(10.9)
Died during first hospitalization	14	5	8	5

TABLE 5
THE AFFECTIVE PSYCHOSES

	(1920-22)	(1930-32) (Percentage in parentheses)	(1940-42)	(1949-51)
Number of patients.....	354	431	442	284
Released within 5 yrs.....	205(83.3)	371(86.0)	411(93.0)	275(96.8)
Readmit. within 5 yrs.....	96(32.6)	116(31.3)	154(37.5)	72(26.2)
Continuously hospitalized ...	38(10.8)	27(6.3)	24(5.5)	1(0.4)
Died during first hospitalization	26	33	7	8

2 groups because at this hospital the somatic treatment of choice for the schizophrenias has been insulin coma therapy since 1935 and for the affective psychoses, electroshock since 1940.

In Group IV, there is an increase in the number of schizophrenic patients and a decrease in the number classified with the affective reactions. This difference may be due to an actual change in the incidence of these reactions, or, more likely, to a tendency to classify more patients as schizophrenic at the expense of the affective psychoses. However, in the present discussion we do not think that the question of diagnosis is too important; the general trends for discharge and readmission are similar for both classifications. In fact, Tables 4 and 5 may be combined for the functional psychoses. If this is done, the total number of patients in each Group remains relatively the same, and in each Group the functional psychoses comprise more than half the total admissions for each period.

The discharge pattern for the functional psychoses follows that for the whole group of patients; an increase in the number (and percentage) of those being discharged within 5 years and a corresponding decrease in the number requiring continuous hospitalization. Many factors have been introduced since 1920 which have influenced this trend in connection with the functional psychoses in particular. Among the more important are changing treatment methods, such as the introduction of the somatic therapies (insulin, lobotomy, electroshock), a tendency to expansion of outpatient treatment, increasing acceptance of mental illness on the part of the community perhaps leading to earlier hospitalization, a willingness to release patients from the hospital sooner, and an increased emphasis on the therapeutic milieu function of the hospital.

It would seem that these same factors also tend to reduce the readmission rate. As seen in Table 2, the readmission rate for the whole group of patients has remained fairly constant. However, looking at the readmission rates for the functional psychoses (Tables 4 and 5) we find that these patients do not follow a similar pattern. The readmission rate for schizophrenic patients, instead of remaining relatively steady, dropped by 4% in Group III and showed a further drop of almost 6% in the last decade. The readmission rate for this group (41.9%) is still higher than that for the total hospital population (37.4%), but seems to be approaching it. The readmission rate for the affective psychoses (Table 5) has also shown a decrease in the last decade, down to 26.2%. The drop is not as marked or as consistent throughout the years as in the schizophrenias, but the readmission rates for the affective psychoses continue to be lower than those for all hospital patients.

In the functional psychoses, the continued decline in readmission rates for Group IV as compared with Group III is of particular interest. In both Groups, insulin coma and electroshock therapy were freely available and were used with about the same frequency. However, there was one outstanding difference in the way the 2 groups were handled; in Group IV, many more received outpatient care either in clinic or office following their release from the hospital. The last decade has seen a great increase in the availability and public acceptance of such care. It is hard to avoid the conclusion that the rapidly growing use of outpatient treatment has had a significant effect upon the readmission rates for the functional psychoses, which comprise more than half the total admissions. The reasons why the general readmission rates have remained level despite the drop in the functional psychoses has not

been fully analysed. Probably this is partly accounted for by the increased admissions for neurotic reactions, alcoholism, and drug addiction, in which groups we find a high readmission rate. Certainly the increase in outpatient facilities and their effects on hospital admissions, duration of stay, discharge policies and readmission rates are of great practical interest and are worthy of intensive study in preparation for future planning for the care of our mentally ill.

SUMMARY

Four Groups of patients, each consisting of 1,000 consecutive first admissions to the Pennsylvania Hospital, have been followed for 5 years from the time of their first admission to a psychiatric hospital. The sample covers a span of more than 30 years in general psychiatric hospital experience in a large metropolitan area on the east coast. Tables show a decrease in death rates and in number of patients continuously hospitalized, with a relatively constant suicide rate. There has been a somewhat uniform readmission rate, but a tendency toward shorter duration of first admissions. The readmission and chronicity rates for the functional psychoses have been decreasing.

Among the more important factors influencing the mortality rates are the introduction of more specific therapies for paresis in the late 1920's, chemotherapy in the late 1930's, antibiotics in the mid-1940's, and constantly improving standards of nursing and ancillary care throughout the whole period. Duration of stay has been influenced by changing policies regarding discharge, the use of somatic therapies, and increasing emphasis on the hospital as a therapeutic milieu. These factors favoring earlier discharge have not resulted in an increased readmission rate; on the contrary, the readmission rate for the functional psychoses has been lowered. When the total sample of patients is considered, fewer are dying in the 5 year period, more are leaving the hospital sooner, and about the same percentage is returning as in the early 1920's.

CONCLUSIONS

It can be seen that several factors introduced since 1920 have significantly altered

the pattern of psychiatric hospitalization. Some of these, such as antibiotics, insulin coma, and electroshock therapy, seem to have reached the point of maximum utilization in hospital practice. It is too soon to assess the long-term effects of the "tranquilizing" drugs on hospitalization, but it does seem that hospital milieu therapy and outpatient treatment are capable of greatly expanded use; their potential to affect the extent and function of psychiatric function seems great.

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DISCUSSION

M. A. TARUMIANZ, M. D., (Farnhurst, Del.)—The authors are to be commended for their painstaking analysis of follow-up studies of patients admitted to a mental hospital in 4 biennia over a 30-year period. All studies that give objective data regarding what happens to patients treated in mental hospitals serve a useful purpose. Psychiatrists over the years have been so busy treating the patients who have come to them in increasing numbers that they have seldom taken time to decide scientifically why certain trends seem to be occurring. Of course they have had to deal with the immediate needs of the situation. If more patients were seeking beds in mental hospitals, the superintendents have had to meet the demand or admit their inability to do so. Rarely have they had more than their own convictions and absolute figures on which to base their appeals for public support to meet the mental health needs of the citizens. The hunches of psychiatrists and their colleagues on the staffs of mental hospitals have been rather reliable, but objective data are more desirable.

The fact that the authors found that over the 30-year period there has been no appreciable increase in the rate of first admissions, the number hovering about 330 a year, is interesting. Although we have not made a thorough study of the statistics available at the Delaware State Hospital, we found that during the biennia studied by the authors our first admissions showed a steady increase. For example, for the fiscal years 1920-22 we had a

total of 262 first admissions (138 males, 124 females). During the biennium of the next decade we received 386 patients (231 males, 155 females) as first admissions. In 1940-42, 597 patients were first admissions, (334 males, 263 females). In 1950-52 a total of 812 first admissions came to us, (420 males, 392 females).

The findings of the authors, regarding the age of first admissions are interesting. They found only a slight difference through the years in the number of first admissions who were 50 years of age or older. Their first admissions in this age bracket in 1949-52 showed a decrease over the two preceding decades.

In a study of first admission to the Delaware State Hospital in 1929-30 we had 27 first admissions 50 years of age and older (18 males, 9 females) in a total 262 first admissions, or 10% of the total first admissions for that year. Twenty-five years later (1954-55) 122 (64 males, 58 females) of 812 first admissions during that year were of this age bracket, or slightly over 15%. Half of the 122 persons 50 years of age and older (32 males and 29 females) were 65 years of age and older. It might have been useful for the authors to have broken down the 50 years and older age group, for our experience in Delaware has been that the probability of returning these older age patients to the community is slight.

Under the diagnostic classification used by the authors of the paper, the data on first admissions for the Delaware State Hospital for the 2 years studied by us show certain differences from their findings. For example, for the years 1949-51 these two investigators found more than 100% fewer first admissions classified as chronic brain syndrome than for the years 1930-32. At Delaware State Hospital the number of first admissions with this diagnosis in 1954-55 is more than 3 times as great as in 1929-30 (21 vs 7). No doubt this difference in the experience in the two hospitals is due to the difference in the number of older patients to which reference has already been made.

The facts the authors cite regarding the length of residence of their patients also interest me. We examined our figures for first admissions for the years 1929-30 and 1954-55 to see how many were released on trial visits after various periods of residence; how many of these returned to the hospital from the trial visit; how many were discharged within the various periods. Of the 75 male first admissions received in 1929-30, 38 patients or slightly over 50% went on trial visits during the first 6 months after admission. Nine of these were returned to the hospital for further treatment within the first 6 months. An additional 6 were released on trial visit within 1 year after admission, another 4 within 2 years, 1 within 3 years, 2 within 10 years, and 1 within 20 years. Of the 6 released on trial visit after spending more than 6 months of the first year in hospital, 2 returned for further

treatment. Only 13 of the 75 male first admissions in 1929-30 or 17% were discharged within the first 6 months. An additional 24 patients or 32% spent more than 6 months in the hospital but were discharged within the first year; another 13 or 17% within the second year, 3 within 3 years of admission, 11 or 14.7% during the first 5 years, 1 within 10 years, 3 within 20 years.

The situation in 1954-55 was considerably different. Of 160 male first admissions, 64 or 50% were released on trial visit within the first 6 months. Of this number 9 were returned within the first 6 months for further treatment. An additional 13 or 8% of the total group went on trial visit during the first year after admission. Four of these 13 were returned for further treatment. Forty-five of the 160 male first admissions received in this year or 28% were discharged within 6 months of admission. Three others spent more than 6 months in the hospital but were discharged within the first year after admission.

The figures for the female first admission during 1929-30 show a much larger percentage of patients going out on trial visit during the first 6 months after admission than is true for the 1954-55 first admission. For example, of the 35 female first admissions in 1929-30, 22 or 63% went on trial visit within the first 6 months. One was returned for further treatment after being home for 3 months, and 1 was discharged as improved 1 month after the trial visit began. An additional 7 spent more than 6 months in the hospital but went on trial visit within the first year.

Of 143 female first admissions received in 1954-55, 50 or 35% went on trial visit during the first 6 months. Of this number 13 returned for further treatment. The number discharged during the first 6 months of 1954-55 is considerably larger than that of 25 years ago; 42 or 28% were discharged during the first 6 months after admission. An additional 9 spent more than 6 months in the hospital but were released on trial visit during the first year. Three of these were rehospitalized. There are 33 of the 143 patients admitted in 1954-55 who have been continuously hospitalized since admission, 8 of whom are 60-69 years of age and 14 are 70-80 years old.

I endorse the authors' suggestion in their summary that there are numerous factors influencing the duration of stay of patients in mental hospitals. There is no unilateral approach to treatment of mental illness. Even the introduction of specific therapies could not have helped mental patients return to the community—although they undoubtedly would have improved their condition—were it not for factors such as the improved staffs of the hospitals, the changed attitude of the public toward discharged mental patients, and the attitude of psychiatrists themselves toward earlier discharge of mental patients.

CASE REPORTS

SOME OBSERVATIONS OF A CASE OF BROMIDE INTOXICATION UNDERGOING HEMODIALYSIS

JOSEPH S. COSTA, M. D., ROBERT P. NENNO, M. D., GEORGE E. SCHREINER, M. D.,
AND LEONARD BERMAN, M. D.¹

The incidence of psychoses due to bromide intoxication is largely a matter of conjecture since no definitive statistics are available. Because of the wide range of symptoms present in bromide intoxication, the diagnosis is made largely by a high index of suspicion and the determining of the blood bromide level. It has been felt by many that bromide delirium does not occur in a "healthy personality." Bromide intoxication may take one of several courses: patient may recover in a few days to several weeks; patient may recover from the effect of the bromide but may have a subsequent long psychotic episode; patient may die. The usual treatment is replacement of the bromide ion with the chloride ion by administration of sodium chloride. The period of recovery varies widely, from a few days to several weeks. Many factors seem to be involved: the underlying psychopathology of the person; the presence or absence of alcoholism; and the presence or absence of any organic disease, especially of the kidneys or the brain, which may play a large part in the prognosis. In some series, the presence of a bromide level of more than 350 mg.% was a bad prognostic sign in terms of mortality.

We recently had the opportunity of observing a patient with bromide induced psychosis who was treated by hemodialysis. Our observations were made by using tape recorded interviews at times when blood and spinal fluid determinations were drawn.

Case History.—The patient was a 46-year-old, white, married female who was referred to this hospital because of bromide intoxication. She was seen at another hospital the day before, by a psychiatrist who made the initial diagnosis. Her blood bromide level at that hospital was reported as 460 mg. %. It was felt that the standard treatment for this high a blood level would not be sufficient and the patient was referred to this hospital for dialysis.

¹ Address: department of psychiatry, Georgetown University Medical Center, Washington, D. C.

Prior to dialysis the patient's speech was markedly slurred. She was disoriented in all 3 spheres. She had visual and auditory hallucinations. She confabulated rather readily. Recent memory was completely lost. She could not do simple sums. Her blood level at this hospital was 360 mg. % of sodium bromide. Her spinal fluid bromide level was 265 mg. (All bromide levels in this hospital are reported as milligrams percent of sodium bromide.)

Additional history from the patient's relatives noted that she had been an alcoholic for many years. One year prior to admission, she had stopped drinking and joined Alcoholics Anonymous and, as far as we could ascertain, this information was correct. Two years prior to admission she had epigastric pain that was diagnosed as peptic ulcer. It was noted for at least 2 years that the patient frequently took large amounts of proprietary compounds (antacids and sedatives) known to contain bromides. Approximately 4 weeks prior to admission the patient became progressively more "mentally disturbed." She had a staggering gait and seemed to be confused most of the time. The patient was prepared for a run on the artificial kidney. The kidney used is the Travenol Twin-coil Kidney.

First half hour: blood bromide level, 344 mg. %. Speech markedly slurred. She is disoriented in all 3 spheres. She has auditory and visual hallucinations. She confabulates readily. Recent memory is completely lost. She cannot do simple sums. There is some paranoid ideation.

First hour: blood bromide level, 222 mg. %. Spinal fluid bromide level, 248. Speech more distinct but still slurred. She knows that she is in a hospital but does not know which one. She is completely disoriented as to time and person. There are still auditory and visual hallucinations. Confabulation still marked, recent memory completely lost. She cannot do simple sums.

Second hour: blood bromide level, 220 mg. %. Spinal fluid bromide level, 200. Speech is still slurred. Orientation remains the same. She still has auditory and visual hallucinations. Confabulation is present to a marked degree. Recent memory is somewhat improved. She can multiply single digits accurately. Paranoid ideation is still present.

Third hour: blood bromide level is 116 mg. %. Spinal fluid bromide level, 184. Speech is still slurred. She still does not know which hospital she is in. Orientation as to time and person is still disturbed. Auditory and visual hallucinations are still present. Recent memory is steadily improving. She can only multiply single digits. Paranoid ideation continues.

Fourth hour: blood bromide level, 74. Spinal fluid bromide level, 170. Speech is somewhat better. Orientation as to place and time are both steadily improving. Disorientation as to person is still very marked. Visual and auditory hallucinations are still present. The patient confabulates readily. Recent memory continues to improve. She still can multiply single digits. Paranoid ideation is still present. There are now some *clang*-associations.

Fifth hour: blood bromide level, 50. Spinal fluid bromide level, 116. Speech is clearer now but there is still some slight evidence of slurring. Orientation as to place and time are still fair. Disorientation to person is still marked. Auditory and visual hallucinations are still present. The patient still confabulates readily. Recent memory up to approximately 3 weeks prior to admission is good. She can remember nothing in the past 3 or 4 weeks in any logical, orderly way. She can do simple sums including addition of large digits. She cannot do the hundred minus seven test. Paranoid ideation is still present. *Clang*-associations are still present. At the end of the fifth hour, the blood bromide level was 36 mg. %.

Twenty-four hours after the kidney run: Blood bromide level, 58 mg. %. Spinal fluid bromide level, 24. Speech has cleared almost completely. Orientation as to person is improving. She still has auditory and visual hallucinations, more marked in the evening. She still confabulates rather readily. Recent memory remains the same. Mathematical ability remains the same. There is still some paranoid ideation and *clang*-associations.

Forty-eight hours after the kidney run: blood bromide level, 56 mg. %. Mental status is essentially the same as the day before.

Seventy-two hours after the kidney run: no

bromide levels obtainable. Speech is clear. She is oriented in all 3 spheres. There is no evidence of delusions or hallucinations. Except for 3 to 4 weeks prior to admission, her recent memory is intact. She does not confabulate. She is able to do mathematical problems with ease and consistently with her level of intelligence.

It is not our purpose to go into a detailed study of the personality of this patient. She was an alcoholic of some 20 years' duration. She had stopped drinking one year prior to admission and joined Alcoholics Anonymous. She was a person who strove for acceptance on a social and intellectual level and also had difficulty handling responsibility. We diagnosed her as a passive-dependent personality.

As far as we know, this is the second case of bromide intoxication that has undergone hemodialysis. Admittedly one cannot draw conclusions from one case successfully treated. However with the high blood level present in this patient and the known morbidity and possible mortality with such a level, rapid removal of bromide ion by hemodialysis seems to merit further consideration.

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PSYCHOSIS DUE TO QUINIDINE INTOXICATION

JAIME QUINTANILLA, M.D.^{1, 2}

In the case here reported a disturbance resembling a schizophrenic reaction was attributed to the administration of quinidine.

A 40-year-old white woman was admitted to the Wilkes-Barre general hospital November 23, 1956, with a diagnosis of paroxysmal auricular tachycardia.

The patient was almost blind. She began to lose her vision during her first pregnancy. During her second pregnancy it was further impaired and the defect has progressed steadily over the past 17 years. She made a good personal adjustment and has done her housework without any serious difficulty. She had, however, much trouble with her

husband, a beer distributor. He was unsympathetic and intoxicated too often. He frequently became angry with his wife and would not talk to her for days at a time. She considered this attitude torturing because she had learned to recognize people mainly by their voice.

Four and again a years ago, the patient had attacks of paroxysmal auricular tachycardia. During the intervals there were briefer paroxysmal attacks, in which she obtained relief by taking a small amount of whiskey or by lying on her left side. Emotional tension due to marital friction was a precipitating factor in each of the major attacks.

At the onset of the episode here reported, she was rushed to hospital. Chief complaints were palpitation and pain in the left chest radiating to the left arm. Heart rate was 200; blood pressure 90/60. EKG showed a ventricular rate of 210. The tracing was indicative of myocardial disease. Examination of the optic fundi revealed bilateral optic atrophy.

¹ Address: Childrens Service Center of Wyoming Valley, 335 South Franklin St., Wilkes-Barre, Pa.

² The author is indebted to J. Franklin Robinson, M.D., for his advice in the preparation of this paper.

Treatment began on the day of admission with a stat dose of quinidine (0.4 grm.). The following day quinidine was given regularly 0.2 grams every 3 hours. The cardiac rhythm returned to normal in 24 hours. The second day at 1 a.m. it was reported that she had been restless, noisy, and moaning. She continued to receive quinidine and on the third day at 10 p.m., she became disturbed. At this hour she received her last dose of quinidine. She shouted at other patients, "they don't believe I am blind." She thought there was a strong light shining on her because she could feel the heat. She thought the nurses had given her a certain medicine instead of the water she had requested, that the doctors and nurses were against her, and wanted to send her to an "insane asylum." She could hear somebody whispering, "she can see, she is just pretending." She thought there was some drinking going on in the ward because she had heard the sound of glasses and thought someone had said to her, "have a beer." She was most actively disturbed during the early morning hours. At 6 a.m. prochlorperazine was started with doses of 5 mgm. 4 times a day. The disturbance terminated the same morning. After confusion had cleared, she could recall vividly the events of the previous night which, smiling, she referred to as "silly." She was discharged 2 days later and has continued to do well.

Comments.—The patient was tested for idiosyncrasy to quinidine with doses of 0.4 grams to which she showed no abnormal reaction. It was then given regularly. After 24 hours, the heart rate had returned to normal. It was when the patient was doing well from the point of view of the circulatory system that the psychosis appeared. Quin-

idine had been continued until the first psychotic symptoms were detected. It was then reasonable to assume that the toxic reaction was due to the quinidine medication. This conclusion was confirmed when the patient improved following withdrawal of the drug. Because of the rapid excretion of quinidine, the psychotic episode lasted only 8 hours.

In comparing this case with the psychoses produced experimentally in normal subjects with LSD-25 and mescaline(1, 2, 3) one finds the toxic phenomena to be similar except that in the patient here reported auditory hallucinations were predominant and visual hallucinations were absent. This might be due to the patient's visual impairment or may be a specific manifestation of quinidine. As in mescaline psychosis(3) the content of the patient's hallucinatory phenomena had a close correlation with topics of significance in her life, her blindness, and her husband's drinking, and his attitude toward her.

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AN UNUSUAL DEATH ASSOCIATED WITH TRANQUILIZER THERAPY

PAUL E. FELDMAN, M.D.¹

This report is prompted by Wardell's review(1) of 3 deaths in the course of reserpine therapy wherein he suggests that there may be a relationship between these deaths and tranquilizer therapy. Wardell implies that a result of this therapy may be a predisposition towards a pneumonic process and a diminution of air-passageway defenses.

Medical morbidity statistics do not at present indicate that there has been an increased incidence of pneumonic processes since the introduction of the tranquilizers, but individual clinicians are impressed by the dimi-

nution of the cough reflex and the frequent appearance of atypical manifestations of pneumonic processes in tranquilized patients.

The following case history suggests that in this particular instance there was a catastrophic failure of the airway defenses to respond to the presence of foreign material in the trachea.

Case History.—A 28-year-old white, schizophrenic male, hospitalized since 1950. Prefrontal lobotomy in 1950 following a prolonged period of aggressive and destructive behavior. EEG following lobotomy was suggestive of diffuse brain disease and Dilantin was prescribed. EEG in 1952 was consistent with seizure discharge activity over the left hemisphere.

¹ Address: Director of Research and Education, Topeka State Hospital, Topeka, Kan.

Dilantin was discontinued in 1953 and a week later the patient had an episode lasting 15 minutes characterized by pallor, tachycardia and loss of contact with the environment. EEG showed spike discharges from both frontal regions.

Patient was placed upon tranquilizer therapy with a phenothiazine drug during Sept. 1956, and the dosage was gradually raised to 2,000 mg/day by Dec. 1956. Five days after this level was reached the patient experienced what was described by nursing personnel as a grand-mal seizure. He was placed upon Dilantin and remained seizure-free thereafter.

Nineteen days later, following breakfast, the patient suddenly and without aura or premonition, fell to the floor, vomited and had a few "convulsive-like movements." A few minutes later he was pulseless and artificial respiration was ineffective. It is noteworthy that the person who reported the incident did not characterize this episode as a grand-mal seizure, but rather as some sort of vague, non-directed muscular movements which she called "convulsive-like movements." It is my distinct impression that this was not a grand-mal seizure but rather extremely softened strangulatory movements.

The pertinent autopsy findings were food particles in the bronchi as well as in the larger and terminal alveoli (which were completely occluded). There was no histological evidence of a pneumonitis.

Cause of Death.—Asphyxiation due to aspiration strangulation.

Discussion.—Aspiration as a complication of a grand-mal seizure is not a rare phenomenon. It is my conviction, however, that this patient did not have a seizure, but rather a failure of the cough reflex as well as the air-passageway defenses so that the response to aspiration of food into the lungs was ineffective.

The similarity between this death and 2 of those reported by Wardell(1) is striking. If this is a newly noted complication of ataraxic therapy, it would rank in clinical significance with such untoward effects as agranulocytic angina. If further reports similar to this one are forthcoming, it will be necessary to consider the diminution of the respiratory defenses as a major untoward effect of tranquilizer therapy. The relative importance of organic brain damage as a predisposing factor is unclear.

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AN EARLY "TRANQUILLIZER"

To obviate these evils [of the "straight waistcoat"] and at the same time to obtain all the benefits of coercion, I requested, by permission of the Sitting Managers of the Hospital, Mr. Benjamin Lindall, an ingenious cabinet-maker in this city to make for the benefit of the maniacal patients a strong armchair, with several appropriate peculiarities [various restraining devices for head, feet, arms and body, with bucket under seat] as noticed in the drawing which I have herewith sent you for your Museum. From its design and effects I have called it a TRANQUILLIZER.

—BENJAMIN RUSH,
(A letter to John Redman Coxe, M. D., 1810)

HISTORICAL NOTES

THOMAS SYDENHAM AND PSYCHOLOGICAL MEDICINE

JEROME M. SCHNECK, M.D.¹

Lewis(1) has made one of the infrequent statements that Thomas Sydenham (1624-1689) described hysteria in his *Dissertatio Epistolaris* issued in 1682. At the close of the last century, Joseph Frank Payne, Sydenham's biographer(2), seemed startled at some of Sydenham's observations. "With Sydenham's exaggerated notion of the importance of hysteria, it was natural that he should carry his doctrine into extremes." We will focus on this later. Whereas Payne had written previously, "When we look into his treatise, we find, however, that he had a very different notion of the disease from that of modern physicians," he was correct from the viewpoint of medicine in the 1890's, and correct according to the interpretation in the present paper though in a different sense from what he intended.

According to Payne, Sydenham believed hysteria to be the most common of all chronic diseases. Fevers comprised two-thirds of diseases, chronic illness the remaining third, and hysteria constituted one-half of chronic illness. "So that by this liberal estimate hysteria is responsible for one-sixth of all human maladies." The percentages become somewhat confused when it is further observed that except for women leading "robust" lives they are "rarely quite free from it."

In a recent scholarly paper, Veith(3) was impressed by Sydenham's observations and a quotation from his writings is consistent with the points mentioned above, except for the statement that "fevers—taken with their accompaniments—equal two-thirds of the number of all chronic diseases taken together, so do hysterical complaints (or complaints so called) make one-half of the remaining third." Despite the percentage discrepancies it is evident that Sydenham believed he en-

countered hysterical disorders far oftener than was generally observed by physicians of his time.

Sydenham encountered illness in "sedentary or studious" men, which was similar to the hysteria of women(4). The diagnosis of hypochondriasis for them was compared to hysteria "as one egg is to another." Payne accepted the view that Sydenham clearly recognized the occurrence of hysteria in men, and Sydenham has been specifically credited with this observation, although others had made it before him.

Veith has written that the association with hypochondriasis or morbid preoccupation over physical health was not apparent in Sydenham's time. This association was evidently credited to Jean Pierre Falret (1822). Furthermore, she was impressed by descriptions which appeared to be a composite of hysteria and depression. The variety of symptoms and reactions, however, including jealousy, suspicion, headache, and intestinal spasms, need not be limited to hysterical reaction types, according to present day evaluations, nor to depressive reactions, nor even to what have been called hysterical depressions. A clue to the true picture of that famous physician's observations is probably indicated best by Payne's comment, "Sydenham's pictures of the symptoms of hysteria in women, which have often been quoted, are vivid and true; though he says the symptoms are so numerous and proteiform that it would be impossible to enumerate them all." There is little doubt, in these circumstances, that in dwelling essentially on the symptoms, and with limited diagnostic categories to which they were attached, the stress was bound to be placed on hysteria and hypochondriasis. The variety of symptoms and reactions would surely be connected now with many diagnostic categories in current use. These would range from the hysterical reactions to the obsessional and to their admixtures in a variety of personality types,

¹ Clinical assistant professor of psychiatry, State University of New York College of Medicine, New York City.

and would encompass numerous schizophrenic reactions, especially those which have in recent years been designated unclassified, latent, ambulatory, or pseudo-neurotic. It would have been the more obvious and extreme forms of psychotic states which could have permitted separation from the hysterical patterns, and Sydenham was in a position to recognize the more malignant illnesses. The more recent complex diagnostic designations, often confusing and inviting frequent differences of opinions, have become based more and more on underlying dynamic personality patterns in lieu of descriptive features. The point stressed now is that in terms of current evaluations, the rich array of symptoms noted by Sydenham served to credit him with a willingness to become aware of the widespread existence of psychological illness in general.

To speak of somatization reactions is commonplace today and it is unnecessary here to dwell on the current impact of what we choose to call psychosomatic medicine. Payne, however, writing more than 200 years after Sydenham's death, could not be as casual as many might be today. When he said that with Sydenham's exaggerated notion of the importance of hysteria it was natural that the doctrine be carried to extremes, he added, "He [Sydenham] thought this affection not only produced the symptoms of disease, but set up actual organic disease." This must indeed have been startling. Since Sydenham observed such widespread existence of psychologically involved symptomatology, he should be recognized for that very fact, aside from any credit due him for descriptions of what today would be accepted as specifically hysterical reactions. He appears then to have a more significant place in the history of psychological medicine. This fact is pertinent in relation to the contemporary scene when the high percentage of psychological affliction is brought into focus. Its frequency may have appeared high to Sydenham's contemporaries, and Payne was probably correct when he said Sydenham had a different notion from that of modern physicians, namely those practicing at the close of the nineteenth century. Today, however, the estimates of involvement of psychological problems and illness in the complaints of patients calling

on their general physicians varies from 25% to 50% of cases and sometimes more. These figures surpass those of Sydenham, even when we view his observations from our vantage point as has been outlined. Many physicians today are undoubtedly no less surprised than were those in his time and in that of his biographer.

Regarding Sydenham's explanation of what he called hysteria, his biographer writes, "It all depends, he says, upon an ataxia or disturbance of the 'animal spirits', which, rushing down upon the various organs of the body, excite pain and spasm; and in short 'create the proper symptoms of that part.'

"Now the word 'animal spirits,' 'psychical pneuma,' or 'breath of the soul,' as carefully defined by Galen, is almost precisely the equivalent of 'nerve-force' or 'nervous energy,' as used in modern books—phrases which, if more plausible on the one hand, are on the other hand, equally vague.

"So that, interpreted in modern language, Sydenham's explanation comes to this: that in hysteria there is a 'disturbance of nervous energy' or 'disordered innervation' which affects different parts of the body, producing functional disturbances which simulate organic disease."

Payne reverted to Galen from Sydenham. One may move from Sydenham to Freud (5). "Throughout life the ego remains the great reservoir from which libidinal cathexes are sent out on to objects and into which they are also once more withdrawn, like the pseudopodia of a body of protoplasm. . . . A characteristic of libido which is important in life is its *motility*, the ease with which it passes from one object to another. . . . There can be no question that the libido has somatic sources, that it streams into the ego from various organs and parts of the body."

All stages in the history of medicine possess familiar notes and familiar sounds. And every stage is indeed a peculiar admixture of fixation and growth. This applies to Sydenham, to Freud, to those who came before, and to those who will appear in the future.

Thomas Sydenham, described as the most outstanding clinician of the seventeenth century(6), idol of Herman Boerhaave(7), the inspiration of Benjamin Rush(8), and the

man acknowledged by the medical historian Singer(9) as the founder of modern clinical medicine, holds also an important niche in the history of psychiatry. He described hysteria, recognized its existence in men as well as women, but more important, he voiced his awareness of the very widespread existence of psychological illness during the course of an active clinical practice of medicine.

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FIRST INTERVIEW

... Besides, Sir, as you and I are in a manner perfect strangers to each other, it would not have been proper to let you into too many circumstances relating to myself all at once.—You must have a little patience . . . as you proceed farther with me, the slight acquaintance, which is now beginning betwixt us, will grow into familiarity; and that, unless one of us is in fault, will terminate in friendship.—*O diem praeclarum!*—then nothing which has touched me will be thought trifling in its nature, or tedious in its telling . . . bear with me—and let me go on, and tell my story my own way:—Or if I should sometimes put on a fool's cap with a bell to it, for a moment or two as we pass along,—don't fly off—but rather courteously give me credit for a little more wisdom than appears upon my outside;—and as we jog on, either laugh with me, or at me, or in short, do anything,—only keep your temper.

—LAWRENCE STERNE,
Tristam Shandy

THINKING

The area of consciousness is covered by layers of habitual thoughts, as a sea-beach is covered with wave-worn, rounded pebbles, shaped, smoothed and polished by long attrition against each other. . . . When we think we are thinking we are for the most part only listening to the sound of attrition between these inert elements of our intelligence. They shift their places a little, they change their relations to each other, they roll over and turn up new surfaces. Now and then a new fragment is cast among them to be worn and rounded and take its place with the others, but the pebbled floor of the consciousness is almost as stationary as the pavement of a city thoroughfare.

—OLIVER WENDELL HOLMES

CORRESPONDENCE

AUSTIN M. DAVIES' TWENTY-FIVE YEARS OF SERVICE

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY:

SIR: I note the fact that Austin Davies has served in his present dual position of Executive Assistant to The American Psychiatric Association and Business Manager of The American Journal of Psychiatry for 25 years.

During this period he has won the respect of the Fellows and members for the highly efficient manner in which he has carried on the manifold duties of his office. He has done much to assure the smooth running of our huge annual meetings, and to provide for the comfort and pleasure of members and guests who attend. Likewise, those who in their individual or group activities within the organization have had need for his advice or assistance have found his help invaluable.

In a recent conversation with Mr. Davies I was keenly aware of his devotion to the

interests and welfare of the Association. This was illustrated, for one thing, by the thoughtful planning, several years in advance, for our future meeting places.

In his personal contacts he has always been most kind and courteous and has done everything possible to insure our personal comfort. Those of us who have had close contact with him have developed an admiration for his skill and competency in handling the business of the Association and especially have we come to feel a warm and affectionate regard for him as a friend.

As one of the oldest, possibly the oldest Fellow of The American Psychiatric Association and also as the senior member of the editorial board of the JOURNAL, it is a pleasure for me to pay my tribute to Austin Davies.

W. R. D.

STATISTICS CHALLENGED

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY:

SIR: This letter refers to C. W. Wahl's article, "Some Antecedent Factors in the Family Histories of 568 Male Schizophrenics in the U. S. Navy," which was published in September 1956 issue (Vol. 113, pp. 201-210) of your JOURNAL. I reviewed this paper for a research seminar held at the Columbus Psychiatric Institute, and, in so doing, a number of serious shortcomings of this study became evident:

1. The author eliminates almost one-third (278 out of 846) of his case records "because of incompleteness, vagueness or ambiguity." It is quite possible, for example, that among those eliminated on these grounds, there is a disproportionately large number on whom data on overprotection and rejection are inadequate for the very reason that these parental attitudes played an insignificant role in the child's development. The author at no time considers such a possible selective bias in evaluating his statistical findings.

2. The author acknowledges the difficulties inherent in his method of establishing in which cases severe overprotection or rejection were present, but he apparently fails to employ even those safeguards that would

have been available to him (e.g. checking on the reliability of the judgments and assuring relative freedom from prejudice).

3. Having no control group of his own, the author compares his findings primarily with data on 100,000 naval recruits at Bainbridge, despite the fact that he himself points out that "this sample is not representative of the generality of Navy men," and, by implication, of the group from which his schizophrenics come. He justifies this procedure with the claim that "the large samplings make comparison valuable," not taking into account that the size of a sample can never diminish the shortcomings of inadequate matching.

4. Aside from the questionable relevance of comparisons between the 2 groups, it is incomprehensible how the author can imply that the difference between the 26% of his schizophrenics who are youngest children, and the 27% or 25% (as variously quoted in the text, pp. 202, and in the summary pp. 209) of the Bainbridge group who are youngest children, supports his hypothesis that this sibling position is conducive to the development of schizophrenia.

5. The author fails to test for statistical significance of differences, e.g. regarding his hypothesis that large family membership

favors the development of schizophrenia, where he finds that the average number of children in the families from which his schizophrenics come is 4.4 as compared to 4.0 for those of the Bainbridge recruits.

6. The author bases this hypothesis regarding family size on the "unexpected" difference he found in a previous study and again in this study between the national average for family size (2.2 children for families who have children) and the average number of children (4.1 and 4.4) in the families from which his schizophrenics come. The author's hypothesis is not warranted because the differences are primarily to be explained in the following ways: (a) The average number of children in the family from which a given child comes is of necessity larger than the average number of children per family unit, because considerably more children come from the 50% of the families that are larger than average than from the 50% that are smaller than average. To illustrate this with a simple example, take 2 families, one with one child and one with 5 children. The average number of children per family unit (i.e. "national average") would in this case be 3.0. However, the average for the number of children in their family from which each of these 6 children comes, would be 4.33. It is clear that the average number of children in the family from which the schizophrenic population stems cannot be compared to the national average of number of children per family unit. (b) Even if comparable figures are used, the national average for number of children per family unit would be smaller

than the average number of children per family in which at least one child has already reached maturity, because the former group also contains families who have fewer children by reason of being more newly established.

7. A check of the author's figures reveal arithmetical errors in Tables 1 and 2.

8. The author apparently arrives at his figure of only 8.4% of the schizophrenic patients having experienced neither parental overprotection and/or rejection, or parental loss, by subtracting from 100% the 50.3% who experienced the former and the 41.4% who suffered the latter without taking into account the overlap group of 13% who are included in both groups. The corrected figure, after making the necessary adjustment for the overlap group, would be 21.3%.

9. The author states on p. 206: "Among the 100,000 random Bainbridge recruits 12% had lost a father by death prior to recruitment, 7% a mother, and 11.4% (sic!) had lost one or both parents by separation, divorce, or death prior to induction." It is self-evident that all of these figures cannot be correct. If 12% had lost a father by death, then the percentage including in addition to these also all those who had lost a mother by death, and those who lost one or both parents by separation or divorce, must be considerably higher than 11.4.

It thus becomes clear that the author's conclusions are not, as he implies, supported by the actual data he presents.

RUDOLF KAEBLING, M. D.,
Columbus, Ohio.

REPLY TO THE FOREGOING

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY:

SIR: Thank you for sending me the letter from Dr. R. Kaelbling which raises certain criticisms in regard to my article, "Some Antecedent Factors in the Family Histories of 568 Male Schizophrenics in the U. S. Navy." Let me respond to his criticisms in the order in which he raises them.

1. It is implied that the rejected cases were discarded from the working sample for failing to state specifically information regarding the nature and quality of the patient's parental relationships. Such was not the case. Indeed, it is obvious that such a study as this

one could only be possible when one has access to a large number of cases, systematically and uniformly studied, and utilizing a required and standardized psychiatric workup. These conditions were all met in the medical department of the U. S. Navy. Detailed inquiry into the parental antecedents is a standard inclusion both in the psychiatric and social services anamnesis at any Naval facility. The "incompleteness, vagueness, and ambiguity" alluded to referred almost exclusively to an absence of an item of vital statistics rather than to so essential an omission as the description of basic parental attitudes.

2. As the paper makes clear, the delineation of parental attitudes is at best a subjective judgment, even though this subjectivity can be reduced by making any such judgment by enumeration in comparison with a set of standard criteria of these attitudes. The multiplication of judges does not decrease this subjectivity in scientific work, and I am not convinced, as apparently is this correspondent, that the difficulties inherent in subjective evaluation of such factors are obviated by such a multiplication of the judges.

3. The concept of the "control group" is one of the most abused and misunderstood in scientific work. It has become a kind of sacred shibboleth to be invoked by the faithful. It seems obvious that in any study of a large population evincing a complex syndrome, it is simply not possible to compound a control group of comparable heterogeneity or one controlled for all the significant variables. The text of the paper makes it quite clear that it was not my intent to infer that comparison with 100,000 random Bainbridge recruits constituted a controlled comparison, but rather that the large sample made such a comparison valuable. The most valuable comparison is to data giving such incidence figures for the general population, which were obtained from the quoted sources. Even this by no stretch of the imagination could be called a "control group." I would ask this correspondent to consider just what factors he would control in the study of a group of this nature.

4. Ultimate and penultimate placement in the sibling hierarchy (and these seemed to have similar dynamic features) constituted 38% of the sample. Comparison of this datum with the incidence of such placements in the Bainbridge group does not support the conclusion that this factor is a highly ubiquitous or significant one. In individual cases, however, this factor was frequently operative, and the possible dynamic interpretations adduced are clearly outlined as having been motivated by a *clinical* rather than a statistical impression.

5. The Bainbridge data were not obtainable in such a form as to permit the calculation of a test of the significance of the difference between the groups.

6. The point made in (a) is in principle true; i.e., any small random sample will tend to produce a somewhat larger family size

than the national average, since the probability is greater in such a group of encountering more members of larger families than small families. But the example is unfortunate, because the correspondent does not take into account the fact that in order to produce the wide discrepancies which he produces in his example of a series of two, one has to enumerate children from the *same family several times*. The average of 3.0 and 4.33 are obtained from *exactly the same* universe (the entire population of both families). None of the schizophrenics in this study were siblings. Moreover, the difference which the correspondent adduces from a series of two families becomes negligible in a large sampling, as was this patient population and the national average cited.

As for (b), I agree with the correspondent that this is a source of statistical error. However, the effect of this factor would be a negligible one, and the *marked* differences between the average families' size in the 2 schizophrenic groups and the national average are so striking that it seems probable to me that this is a significant datum, even though there are acknowledged sources of statistical and artifactive error.

7. The arithmetical discrepancies which the correspondent noted are due to the fact that the percentage figures were computed only to the nearest tenth. This follows the general custom in statistical reporting.

8. The error that the correspondent indicates is an indubitable one, and is a regrettable oversight. The point made, however, is not vitiated. Even by this amended figure, approximately four-fifths of the patients had experienced antecedent pathological parental relationships or parental loss.

9. The inclusion of the words "or death" after the comma in the sentence quoted is an erratum. The sentence should read, "Among 100,000 random Bainbridge recruits 12% had lost the father by death prior to enlistment, 7% a mother, and 11.4% had lost one or both parents by separation or divorce prior to induction."

I wish to thank Dr. Kaelbling for his helpful criticisms. I do not feel, however, that they in any particular invalidate the general conclusions which were drawn from the data.

C. W. WAHL, M.D.,
Los Angeles, Calif.

COMMENT

OUR BUSINESS MANAGER

When the present editorial service¹ began its duties in 1931 The American Psychiatric Association had no permanent headquarters. Business was transacted at the annual meeting and at interim meetings of Council or Executive Committees but there was no administrative officer continuing on duty throughout the year and from one administration to the next, and no central repository for the preservation of records; and although the business proceedings of the Association have been published each year, considerable valuable material relating to the earlier years has been lost.

At the annual meeting in 1932 President Wm. L. Russell brought before the membership the need of a permanent office and the appointment of an executive assistant who would also become the business manager of the American Journal of Psychiatry and take over many of the duties of the secretary and treasurer of the Association.

By a happy coincidence Mr. Austin M. Davies, a Ph. B. from Brown University and whose experience especially qualified him for the position, became available and was appointed to assume his duties Oct. 1, 1932 on the eve of his thirty-second birthday.

He was not unacquainted with psychiatric matters. Being the son of a clergyman it was not unnatural that he would have to help himself through college, and to do this one of the positions he held was that of an attendant on week-ends at Butler Hospital where he served for 3 years. This experience plus the influence of his brother, Dr. Stanley P. Davies of the State Charities Aid Association and author of a book on mental deficiency, prompted Austin Davies to write his graduation thesis at Brown University on the subject: The Relationship of the Public to the Problem of Mental Illness. Little could he have thought at that time that the best

energies of his life would be devoted to the interests of the mentally ill and to the great American agency organized in their behalf:

When Mr. Davies entered upon his duties the question of budget for this new departure was embarrassing and as a temporary measure the National Committee for Mental Hygiene most generously provided office space rent free. Under this kind patronage we continued for 5 years.

By 1937 Mr. Davies felt that the organization should be able to stand on its own feet and, strongly supported by Dr. Clarence Cheney, recommended to Council the establishment of a separate head office to be maintained with the Association's own funds. Space was secured in the Academy of Medicine, 2 East 103rd Street. This was our headquarters for another 5 years when it was removed to Rockefeller Center where it has since remained.

It is interesting at this point to consider some figures covering the period since Austin Davies became executive assistant and business manager of the JOURNAL. The total membership of the Association in October 1932 was 1,416. Today it is close to 10,000—not that Mr. Davies can be held responsible for this hypertrophy. For another bit of statistics however he may properly be given credit. The first issue of the JOURNAL during his regime (Nov. 1932) contained 8 pages of advertising (17 private sanitaria and 1 commercial advertisement). In the March, 1957 issue there are 35 pages of advertising (22 private sanitaria and 24 commercials).

One of the major tasks of the new business manager was to increase the income of the JOURNAL both by augmenting the paid subscription list and by increasing the revenue from advertising. Twenty-five years ago there were 1,022 non-membership subscribers and the paid subscriptions amounted to \$5,000. Today, despite several increases in rates the income from paid subscriptions amounts to \$24,300 (2,500 subscribers).

¹ Only four of the present members of the editorial board were on duty at that time. The others are later appointees.

From advertising the revenue has risen from \$336.24 in 1932 to \$40,860 in 1956. A few years ago it was necessary to engage the services of an advertising agency as Mr. Davies' multiplying responsibilities made it quite impossible for him to give the necessary time to the selling of advertising. He engaged Mr. Steven K. Herlitz of the Medical Publications Bureau for that special purpose and the collaboration thus established has more than paid for itself. Advertising income for 1957 is estimated at \$50,000; subscription revenue at \$25,000.

The financial transactions of the Association and the *JOURNAL* are handled in Mr. Davies' office. The annual budget has reached the present round sum of \$800,000. He is responsible for all disbursements authorized by the budget committee and signs all cheques. Previous to 1944 one officer served as both secretary and treasurer. When the executive assistant took over he assumed the great bulk of the duties of this double office and has carried a substantial share of them ever since.

One of our executive assistant's heaviest responsibilities is planning for the annual meeting. He has traveled the country over to locate cities that can offer suitable hotel accommodation for our ever-growing organization. He has intimate acquaintance with some 200 hotels across the land, and his travel for all purposes in the service of the Association approximates 25,000 miles a year. The ease with which, in collaboration with the local committee on arrangements, he takes care of our huge meetings with their multifarious activities is something to take note of. It is almost necessary for him to be in several places at the same time, and he almost does it.

Anyone who has had occasion to visit Mr. Davies' office in New York will be aware of the great diversity of the calls upon his time—personal interviews, enquiries concerning the several kinds of insurance he has arranged for members, requests for advice in a variety of problems including referrals to hospitals and private physicians. His desk has become a general information bureau. His long acquaintance with the many health and welfare agencies located in or having headquarters in New York, as well as with hospitals and clinics elsewhere makes it possible for him to answer telephone enquiries often with surprising facility, supplying the information desired. In his relations with individual members who have sought his help there has been much more than the mere performance of official duties; there has been a personal and friendly interest that has endeared him to all who have had occasion to call upon him.

The 1938 meeting of the Association in San Francisco—the first on the West coast—was noteworthy. Mr. Davies had arranged a sight-seeing tour, going by the southern route and returning by the northern, in connection with this meeting. It was altogether a delightful and memorable occasion, the stimulus of which in the West resulted the following year in 100 applications for memberships from the State of California alone.

The writer did not need 25 years to appreciate the value of Austin Davies' services to the Association, and particularly as business manager of the *JOURNAL*. From the first his efficiency, dependability and loyal collaboration have not only lightened materially the editorial load but have made for a happy working association that I do not think could have been improved. It has been a pleasure for me to work with him.

C. B. F.

DIE REINE VERNUNFT

I do not belong to the amiable group of "men of compromise." I am in the habit of giving candid and straightforward expression to the convictions which a half-century of serious and laborious study has led me to form. If I seem to you an iconoclast, I pray you to remember that the victory of pure reason over superstition will not be achieved without a tremendous struggle.

—ERNST HAECKEL

NEWS AND NOTES

MEMORIAL IN ZÜRICH FOR ADOLF MEYER.

—A few students and associates of Adolf Meyer have undertaken to place a small tablet on the house where he was born in Niederweningen, Switzerland, and a larger plaque in the Burghölzli Hospital, Zürich, where he worked with Auguste Forel.

Appropriate services will be held some time during the meetings of the International Psychiatric Congress at Zurich early in September of 1957, with Prof. Manfred Bleuler presiding.

The cost has been guaranteed by the undersigned committee, but if others associated with Dr. Meyer would like to contribute to this undertaking, such donations would be welcomed. Since the cost will not be great, only token contributions need be considered. If the total received exceeds the amount necessary, the excess will be turned over to some agency for a purpose deemed appropriate by the committee.

Sir David Henderson
Miss Eunice Winters
Dr. Oskar Diethelm
Dr. D. Ewen Cameron
Dr. Alexander Leighton
Dr. Paul Lemkau
Dr. Wendell Munice, Secretary

Prof. Manfred Bleuler of the Burghölzli Hospital has notified the Committee concerning the arrangements for the ceremonies for the presentation of the memorial plaque for Dr. Meyer. The service will be held in the auditorium on the afternoon of Thursday, September 5. This is a free time for visiting clinics, and will not interfere with the program of the International Psychiatric Congress. Dr. Bleuler will preside at the ceremonies and brief comments will be made by Dr. David Henderson, who was Dr. Meyer's first chief resident physician at the Phipps Psychiatric Clinic at its opening in 1913; Dr. Oskar Diethelm, who is Swiss born, and was one of Dr. Meyer's young associate professors at the Phipps; and Dr. Oscar Forel, a family friend and a son of Dr. Auguste Forel, with whom Dr. Meyer worked in his student years in Zürich.

Dr. Bleuler suggests that, since the auditorium holds only 120, visiting American psychiatrists and all friends and pupils of Dr. Meyer from other countries would be given preference in the seating and that they should register their wishes about this on arrival at the Congress. Dr. D. Ewen Cameron, who once worked with Dr. Meyer and is a past-president of the American Psychiatric Association, has been designated by the executive committee to represent the Association at the ceremonies.

LATIN AMERICAN PSYCHIATRY AND PSYCHOTHERAPY.—

During August, 1956, two important congresses took place in Buenos Aires, Argentina: the First Latin-American Psychoanalytical Congress, and the Second Hispano-American Medical Psychological Congress.

The Psychoanalytical Congress was presided over by Dr. Garma, who was principally responsible for its organization. The Medical Psychological Congress was organized mainly by Dr. Rascovsky. Both Congresses were notable for the scientific value of the papers presented and because of the well-known personalities who attended them. The Psychoanalytical Congress brought together most of the qualified psychoanalysts of the Spanish-speaking world, among them Drs. Matte, Whiting, Davanzo (Chile); Drs. Marcondes, Soares, Oliveira, Leite Yhan (Brazil); Dr. Sorhegui (Cuba); Drs. Portillo, Blaise (Spain); and Dr. M. Manrique (New York), who lectured by invitation in several countries.

At the Medical-Psychological Congress, Dr. Hans Selye, Montreal, Dr. Seymour J. Gray, Boston, Dr. A. Seguin, Peru, and many others presented papers and participated in round-table discussions.

Other activities in Latin America are: Columbia: "Group of Psychoanalytic Studies" has been organized by Drs. Socarrás, Lizarazo, and Meluk. Peru: the distinguished Prof. Delgado is publishing the *Revista de Neuro-Psiquiatria*. Chile: Prof. Matte has just published two important books. Argentina: Drs. Garma, Rascovsky and Pichon-Riviere are among the teachers of the Argen-

tinian Psychoanalytic Association, the largest psychoanalytical group in Spanish-speaking countries. Brazil: Dr. E. Mira is engaged in teaching and has published the textbook, *Psiquiatria*, which deserves high praise. Venezuela: Dr. Quintero Muro has been appointed director of mental hygiene.

NEW YORK STATE INSTITUTE ON CORRECTIONAL PSYCHIATRY.—Commissioner Paul H. Hoch and Correction Commissioner Thomas J. McHugh announce a joint institute on correctional psychiatry and group counseling, to be held by the New York State Departments of Mental Hygiene and Correction at Hudson River State Hospital, Poughkeepsie, May 20-24, 1957.

The institute, the first of its kind to be held in the state, will investigate theories of criminal responsibility, preservation of inmates' confidence, the function of special examinations, correct use of observation, and the role of psychiatric diagnosis in modern correctional study and rehabilitation.

Principal speakers at the week-long conference will be Dr. Winfred Overholser, St. Elizabeths Hospital, Washington, D. C.; Dr. Manfred Guttmacher, Medical Service, Supreme Bench of Baltimore, Md.; and Dr. Henry A. Davidson, Essex County Hospital, Cedar Grove, N. J.

WOODS SCHOOL SPRING CONFERENCE.—Vocational training and rehabilitation of the mentally and physically handicapped will be the concern of psychiatrists, social workers, psychologists, and educators meeting in Chicago, May 10-11, 1957, for the annual Woods School (Langhorne, Pa.) spring conference. The meeting is being held in collaboration with the Dr. Julian D. Levinson Research Foundation for Mentally Retarded Children, and admission by invitation may be secured by writing The Woods School, Langhorne, Pa.

TEACHING AND IMPLEMENTATION OF PSYCHIATRIC-MENTAL HEALTH NURSING.—A workshop on the teaching and implementation of psychiatric-mental health nursing will be held at The Catholic University of America, June 14-25, 1957. Under the direction of Margery E. Drake and Mary M. Redmond, of the Catholic University of

America School of Nursing Education faculty, the workshop will concentrate on the planning and development of educational and service programs in the area of psychiatry and mental health.

Application should be made to: Director of Workshops, The Catholic University of America, Washington 17, D. C.

REHABILITATION CONVENTION.—The joint convention of the American Association of Rehabilitation Therapists, the Association for Physical and Mental Rehabilitation, and the Association of Medical Directors and Coordinators will be held at the Conrad Hilton Hotel, Chicago, July 7 to 12, 1957.

TRAINING IN PSYCHIATRIC NURSING.—How psychiatric nursing is taught, and how it ought to be taught in undergraduate programs in collegiate schools of nursing, is the subject of a study recently launched under the auspices of the National League For Nursing, according to an announcement by Anna Fillmore, general director of the N.L.N.

Initiated by a grant of \$12,420 from the National Institute of Mental Health, this project, the first of its kind, is expected to extend through 2½ years at a cost of approximately \$100,000. Five regional conferences are projected, and a summary national conference of experts in psychiatric nursing education. Their findings will be published in a report now scheduled for 1959.

Participating in the study conferences will be a wide cross-section of psychiatric nurse specialists, social scientists, psychiatric nurse educators, and nurse specialists in all clinical areas of the undergraduate curriculum.

For further information write: Director, National League For Nursing, 2 Park Ave., New York 16, N. Y.

UNIVERSITY OF MINNESOTA ALCOHOLISM SYMPOSIUM.—The Minnesota Department of Health and the University of Minnesota announce a symposium on alcoholism for physicians, to be held at the Center for Continuation Study, University of Minnesota, May 23-24, 1957.

Speakers will include Dr. Lorant Forizs, medical director of the Florida Alcoholic Re-

habilitation Program; Dr. R. Gordon Bell, director of the Bell Clinic, Willowdale, Ontario; Dr. Vernelle Fox, medical director of the Georgian Clinic, Atlanta, Ga.; Drs. Nelson J. Bradley and Lloyd Smith of the Willmar State Hospital, Minn.; and Dr. K. W. Douglas, superintendent of the Sandstone State Hospital, Minn.

The conference is open to all physicians, but attendance will be limited to provide ample opportunity for group discussion. The registration fee for the course is \$5. For applications write: Center for Continuation Study, Univ. of Minn., Minneapolis 14, Minn.

EASTERN PSYCHIATRIC RESEARCH ASSOCIATION.—The 8th scientific meeting of the Eastern Psychiatric Research Association was held April 11, 1957, at Bellevue Hospital, New York. The program consisted of a film, "The Metabolic Insufficiency Syndrome," and an address by Dr. Angus Bowes, St. Anne's Hospital, Quebec, on "The Psychopathology of the Hi-Fi Addict." Discussants of Dr. Bowes paper were Dr. Merrill Moore, Boston, and Dr. Ferruccio A. de Cori, New York City.

TWO NEW MENTAL HYGIENE INSTITUTIONS FOR NEW YORK CITY.—Governor Harriman has recently announced that the sites have been chosen for 2 new mental hygiene institutions to be built in New York City. One 3,000-bed hospital will be constructed in Staten Island, and a new type of school for mentally retarded adolescents will be located in Brooklyn.

The Brooklyn school will carry out a proposal made by Governor Harriman last year, on the recommendation of Dr. Paul H. Hoch, Commissioner of Mental Hygiene, for an institution to take care of a special group of patients, who now constitute a problem in the state schools for the retarded, and who need more intensive psychiatric care and vocational training. Cost of this school is estimated at 15 millions.

The school will be designated for 600 male and female patients, generally in the age group under 21, with a relatively small number under 16 years.

JOURNAL OF INDIVIDUAL PSYCHOLOGY.—H. L. Ansbacher, editor, announces that the *Journal of Individual Psychology*, a publication of the American Society of Adlerian Psychology, Inc., formerly known as *The American Journal of Individual Psychology*, has broadened its editorial policy. According to the new policy, "the Journal is seen as the medium of expression of those in psychology and related fields who are interested in a holistic, teleological, phenomenological, and socially oriented approach, based on the assumptions of an active creative self, an open dynamic system of motivation, and an innate potentiality for social living."

The May issue, the first under the new policy, contains papers by Hadley Cantril, Albert Ellis, Ruth Hartley, Clark Moustakas, and Edmund Sinnott, among others, and a heretofore untranslated paper by Alfred Adler, dated 1937, the year of his death.

Requests for sample copies and all other communications are to be addressed to Dr. H. L. Ansbacher, editor, University of Vermont, Burlington, Vt.

ONTARIO HOSPITAL FOR MENTALLY ILL CHILDREN.—Canada's first mental hospital entirely devoted to the care and treatment of mentally ill children, will be established at Thistletown in Metropolitan Toronto, on a 92-acre site which has been acquired from Toronto's Hospital For Sick Children.

Health Minister Phillips has described the new centre as designed strictly for mentally ill, or psychotic children, and not for mentally defective or mentally retarded children. The Thistletown hospital was constructed in 1928 and has a capacity of 115 beds.

CHILDRENS HOSPITAL SOCIETY OF LOS ANGELES.—The Childrens Hospital of Los Angeles and Child Guidance Clinic of Los Angeles will hold their annual workshop on special pediatric-psychiatric problems in the Childrens Hospital, 4572 Sunset Boulevard, Los Angeles, May 28, 29, 1957. Hale F. Shirley, M. D., of the child psychiatry clinic, Stanford University Hospitals, will lead the discussions and workshops. Members of Childrens Hospital and Child Guidance Clinic staffs, as well as distinguished guests

outstanding in their fields, will participate. The 2-day program will include a review of problems of developmental crises, psychosomatic problems, some special problems of adolescence, atypical children, and "brain damaged" children.

The fee for the series is \$10 payable to Childrens Hospital Society, and to be mailed to the office of the medical director, Childrens Hospital, 4614 Sunset Boulevard, Los Angeles 27, Cal.

SANDOR RADO LECTURES.—Thomas M. French, associate director of the Chicago Psychoanalytic Institute, delivered the second Sandor Rado Lectures at the College of Physicians and Surgeons, Columbia University, on February 15 and 16, 1957. The titles of his lectures were: "Analysis of the Dream Censorship," and "The Role of Hope in Psychoanalytic Therapy."

NORTH PACIFIC SOCIETY OF NEUROLOGY AND PSYCHIATRY.—The annual convention of the North Pacific Society of Neurology and Psychiatry, and the North Pacific District Branch of The American Psychiatric Association was held in the Benjamin Franklin Hotel, Seattle, Wash., April 11-12, 1957. Guest speakers on this occasion were Dr. Carl List and Dr. Matt Ross.

JOINT COMMISSION ON MENTAL ILLNESS AND HEALTH.—This Commission, made up of representatives from 27 national agencies concerned with various aspects of mental health, is a non-governmental agency operating under Congressional authorization and annual grants from N.I.M.H. It is now in the second year of its study of the United States' resources and needs for fighting mental illness and promoting mental health. The staff, with headquarters in Cambridge, Mass., has 10 study projects already under way. Dr. Kenneth E. Appel of Philadelphia is president of this Joint Commission.

The National Association for Mental Health is the first citizens' voluntary health group to join with Congress and N.I.M.H. in the financial support of the 3-year study being made by the Joint Commission.

VIRGINIA BEYER LECTURES.—The department of psychology, Springfield (Maryland) State Hospital, announces that the Virginia Beyer Memorial Lecturer for 1957 will be Melitta Schmideberg, M. D. The topic will be "Psychotherapy and the Therapeutic Management of Delinquents." The lectures will take place on May 24 and 25. Registration fee is \$10.00. For further information write to Dr. Michael H. P. Finn, Springfield State Hospital, Sykesville, Md.

NATIONAL HEALTH FORUM.—Preventive psychiatry was represented at the National Health Forum, meeting in Cincinnati, March 21, by Francis J. Braceland, president of The American Psychiatric Association, and Dr. Jack R. Ewalt, director of the Joint Commission on Mental Illness and Health. Dr. David B. Allman, president-elect of the American Medical Association, also spoke at this Forum urging that all doctors should recognize the responsible part they have to play in dealing with mental health issues.

The National Health Council, represented by this Forum, is composed of 59 organizations. Dr. Allman indicated the need for planned cooperation of all these groups with the medical profession in attacking the country's number one public health problem.

DEATH OF DR. BRITT.—Dr. Robert E. Britt, well-known psychiatrist of St. Louis, Mo., died suddenly of a heart condition at his home, Oct. 28, 1956. Born in Omaha, Neb., March 9, 1904, Dr. Britt graduated from Creighton University in 1929. He interned at Highland Hospital, Oakland, Cal., and spent several years in residency in neuro-psychiatry at Boston Psychopathic Hospital and Montefiore Hospital, New York. He joined the faculty of St. Louis University School of Medicine in 1935 and advanced to the rank of associate professor in neuro-psychiatry. Throughout the past 20 years his medical interests were almost entirely in teaching and practice of clinical neuropsychiatry.

Dr. Britt was a fellow of the American Medical Association, The American Psychiatric Association, and the American College of Physicians.

20TH INTERNATIONAL CONGRESS OF PSYCHOANALYSIS.—The 20th Congress of the International Psychoanalytic Association will be held in Paris, France, July 28 to August 1, 1957. Organized by the Société Psychanalytique de Paris, the three main panels projected are: 1. Contributions of Direct Child Observation to Psychoanalysis, with Anna Freud delivering the main presentation; 2. Neurotic Ego Distortions, with Dr. Maxwell Gitelson giving the main address; and 3. Variations in Technique, with main presentation by Dr. Rudolph Lowenstein.

Dr. Heinz Hartmann, president of the International Association, will open the Congress. Further information may be obtained from the committee chairman, Dr. Edward Kronold, 17 East 96th Street, New York, 28, N. Y.

RESEARCH EQUIPMENT EXHIBIT.—Members of the A.P.A. are cordially invited to attend the 7th annual Research Equipment Exhibit and Instrument Symposium to be held May 13-16 at the National Institutes of Health, Bethesda, Md.

Approximately 100 exhibitors will display one-quarter million dollars' worth of the latest research instrumentation. Certain equipment is here viewed publicly for the first time. This annual display has become the largest concentration of research equipment in the United States, and provides a

unique opportunity for qualified persons to view the instruments and to exchange information with the manufacturers representatives.

The exhibits will be open daily, 11:30 a.m. to 6:00 p.m. on May 13 and 16, and at 9:00 p.m. on May 14 and 15. In conjunction with the exhibit, a symposium will be held May 13-15.

SMITH, KLINE AND FRENCH FELLOWSHIPS IN PSYCHIATRY.—The American Psychiatric Association has recently announced the award of 14 Smith, Kline and French Foundation Fellowships in psychiatry. These 14 grants, established mainly to provide training in psychiatry, total \$38,454, and represent the largest amount given in one year under the Foundation's total grant of \$90,000 for the 3 years 1955 through 1957.

The fellowships are administered by a committee named by The American Psychiatric Association consisting of Drs. Kenneth E. Appel, Philadelphia, Chairman; Daniel Blain, Washington, D. C.; Henry Brill, Albany, N. Y.; Jacob E. Finesinger, Baltimore, Md.; Francis J. Gerty, Chicago, Ill.; Robert G. Heath, New Orleans, La.; David A. Young, Raleigh, N. C.; and Seymour D. Vestermark, Bethesda, Md.

Applications and further information may be obtained from the fellowship committee, P. O. Box 7929, Philadelphia, Pa.

MIND MOLDS

From what I have said, it is clear that I was in the intellectually enviable position of being able to approach these (religious) problems without that conditioning in youth which, for the large mass of Christians, stigmatizes doubts of creed or critical appraisal of doctrine as reprehensible or even sinful; and which automatically inhibits later contemplation except from theologically fixed premises. My mind was not, in the liquid state of childhood, poured into a mold and allowed to harden into one or the other of the ingots of Christian denomination which, whatever their minor differences of pattern, all hold through life, unmalleable in the fires of reason, the basic form of unquestioning faith.

HANS ZINSSER,
The Biography of R. S.

BOOK REVIEWS

THE LIFE AND WORK OF SIGMUND FREUD. Vol. 2.
Years of Maturity, 1901-1919. By Ernest
Jones, M.D. (New York: Basic Books, Inc.,
1955. \$6.75.)

There have been several attempts in the past to offer the reading public a biography of Freud, attempts which failed because of many factors. Fritz Wittels' *Freud* was charged with a great deal of negative affect, and therefore his little book remains but a signpost on the psychoanalytic road of invasion of psychopathology, a sign of battle so to speak. Such more recent efforts as that of Puner seem to be more a response to the increasing popularity of the theme rather than accurate biographical writing. Freud's own "autobiography" is but a masterpiece of saying as little about one's self as possible.

The biography of Freud by Ernest Jones bears all the earmarks of authenticity and richness and variety of information. The first volume bade fair to become an example of historiography rather than biography, but it at once stood out as a monumental and objective contribution to the history of the life and works of Sigmund Freud. It must be recalled that this first volume followed the publication of the letters of Freud to Fliess, letters which revealed a great deal of the personality of Freud, of his anxiety, ambitions and emotional biases. Yet the first of Jones's three promised volumes contains much that is new, a lot that is impressive, and it will remain for years to come a source book for those who would wish to gain a more intimate knowledge of Freud and of the workings of his mind.

One felt even in the first volume a tendency on the part of the biographer to be more a chronicler than a biographer. But as long as the material was new and revealing it was easy to overlook, or even not to notice, this tendency to recite certain facts rather than to produce the synthesis which after all is the essence of true historical writing; and biography is history combined with psychology. However, Ernest Jones acquitted himself in the first volume of this *magnus opus* with considerable credit. He was terse, at times even relentless, in not concealing some of Freud's personality quirks or difficulties. Jones seemed definitely embarked upon a search for an answer to the riddle that was Freud, for riddle Freud was—a mixture of poetic creativeness and scientific dryness, of luxurious trends of imagination and of intellectual austerity, of libertarian indulgence and puritanic self-denial. This riddle was partly hinted at in a dry sort of way in the first volume, and one naturally looked forward to the next with considerable curiosity and interest.

This second volume covers the years 1901-1919. One cannot help but sympathize with the difficulties

with which Jones was confronted in writing about those years. First of all, Jones himself was not only a witness of but an active participant in what became popularly known as the psychoanalytic movement. This in itself must have been a considerable handicap. It must have been rather difficult if not painful to strain one's objectivity in the midst of the battle. There are some who welcome this particular feature of Jones's second volume; thus Henry Lowenfeld is moved to say: "The fact that Jones's own life and work are intimately involved with Freud's, that this book is part of Jones's autobiography, endows it with its singular freshness of personal expression. Future works may attempt more critical objectivity and evaluation, but it is not likely that any one will ever replace this work" (J. Am. Psychoanal. Assoc., Oct. 1956). Quite true. One is naturally inclined to stand a little in awe before this monumental testimony to a person's productivity, for whatever else one might think of this biography, with the third volume as yet to appear, it represents already a weighty and in many respects a unique accomplishment. All this despite a considerable lack of what Lowenfeld calls "critical objectivity."

As far as the story of the scientific evolution of Freud and of psychoanalysis is concerned, the reader would do well not to expect too much from the perusal of this volume. Those who are familiar with the psychoanalytic literature will learn little new, those who are not will learn less—for in this respect the presentation is not only of necessity sketchy, but the material is arranged in an unfortunate manner of mere chronological listing, so that the inner cohesion of the working of Freud's mind is not clearly brought out. At times one feels almost impatient about the repetitiveness here and there. Yet this repetitiveness is inevitable if one tries to combine purely chronological presentation with some sort of psychological synthesis.

Whatever the fate of Freud's system in the history of thought, it will take a considerable time before scientific history will be able to offer a verdict that would be both just and tenable, both scientific and psychologically coherent. This second volume is written only some 17 years after Freud's death, and in the perspective of history it must be looked upon more as a source book than a biography. In one respect, however, it reveals some characteristic data which no one else may be able to supply in the future. I have in mind two things which are indivisible in my frame of reference; Freud's anxious personality and his relation to and role in the psychoanalytic movement. This movement, as is known, has been undergoing considerable fragmentation of late. Not only are there several "split-off" psychoanalytic groups, but within the frame of the International Psychoanalytic Association there are subgroups which do not pull

together at all. There are cities in which there are two psychoanalytic societies, both "recognized" as Freudian, both "authorized" to train psychoanalysts, both members of the American and consequently of the International Psychoanalytic Association. Moreover, there is another group of Freudians who are psychoanalysts in the Freudian sense but who are not physicians; there is yet another group, or strictly speaking a number of individuals, who are laymen but who enjoy the status of honorary or "special" members of the medical organizations of psychoanalysts.

In other words, within the framework of recognized Freudians there seems to be a series of subdivisions based not on ideological but perhaps on personal, at any rate, almost adventitious, grounds. All this would seem to mean that the psychoanalytic movement *qua* movement is in the process of losing ground. This is not the place to discuss the why and wherefore of this situation, or the historical significance of it, but it must be kept in mind if we are fully to understand the special bias of Ernest Jones which is reflected in this second volume of his biography of Freud.

The importance of psychoanalysis as a movement during the years covered by the second volume is so conspicuous that one can well understand that Jones's heart and mind are centered on this movement, and one can easily understand or at least be duly tolerant of Jones's eagerness to emphasize his total identification with the pioneers of this movement. He often points out that the majority of the pioneers of psychoanalysis were Jews, and sensitive Jews, keenly aware of the bias against them on the part of universities, academic circles, and society as a whole. Speaking of the Jews' awareness of this discrimination, Jones—as if to leave no doubt of how much he was one with the original group of men who gathered around Freud—points out that he had no difficulty in understanding those early Freudians, since he himself belonged to a persecuted minority! To the uninitiated this might sound almost ludicrous, for one would be hard put to find in the successful Welshman Jones a sense of belonging to a persecuted minority. One wonders whether Lloyd George had the same sense.

However, this exaggeration of Jones' must be understood more as an affective emphasis of unity with the psychoanalytic aborigines than merely as a comical overstatement. In justice to Jones, one must say that he is not given to too much affective emphasis; being a good Welsh-Englishman, he is rather given to terse understatement. Yet there is no doubt left in the reader that Jones, in writing the second volume, wrote it not only with a sense of affective participation but to a very great extent with a sense of personal preoccupation with the events and people he had to mention or describe. If this were not so, it would be difficult to explain why Jones with all his identification with the persecuted minority had to point out that Otto Rank's name was actually Rosenfeld, and Sandor Ferenczi's Fraenkel. These are not the

only superfluous details which ought to be outside the scope of a biography of Freud. The perennial hypochondriasis of Ferenczi, Rank's attempts to avoid military service are totally out of place. Even more out of place are Jones' remarks about A. A. Brill, whose life-long friend Jones was reputed to be. There are remarks strewn over many a page to the effect that Brill knew few if any foreign languages and that he, Jones, tried to convince Freud that Brill was a poor translator of Freud's writings. Freud's response, to the effect that he would rather have a good friend than a good translator, left Jones undaunted, and the American reader may be very much surprised to find how little credit, if any at all, Brill is given for all that he did for the psychoanalytic movement in America. The impression is gained, and an emphatic one, that it was all the work of Ernest Jones.

I do not want to give the impression that Jones has written a purely egocentric book. Far from it. His pen sketches of Jung, Stekel, Adler, Rank and Ferenczi are veritable masterpieces—here and there acidulous, pin-pricky, but little chef-d'oeuvres of incisiveness, even though the reader is never permitted to forget whether Jones happens to be dealing with a friend or an enemy of the psychoanalytic movement as Freud saw it.

A word or two about that which does appear to be the major theme of the volume: the psychoanalytic movement. The impression is gained that from the very beginning Freud was extremely eager to make friends with certain personalities of academic prestige. He went out of his way to "keep" Putnam of Harvard, or Jung, or Bleuler, but he dropped with what appeared considerable ease the minor dissenters. Officially, Freud seems to have had no interest in the administrative matters of the International Psychoanalytic Association, but actually, as Jones lets it slip, Freud "designated" the President of the International Association, and the whole business of actual administrative leadership was in the hand of "the Committee" of 7 persons of whom Jones was one. Thus at first Freud himself led the battle, then the Committee whose members were selected by Freud and elected by no one, and who wore a special ring (a gift of Freud himself to each one). It seems to have been a rule of "seven rings" or their future substitute—an unofficial but actual center of power of the psychoanalytic movement. The criterion of belonging was loyalty to Freud. Ideological disagreement was sufficient cause for being dropped or for stepping out. The very few exceptions like the Swiss minister Pfister seem to be real exceptions, not easily understood in the light of what might be legitimately called psychoanalytic politics.

Of course, all this in itself has little to do with psychoanalysis as a scientific discipline or a therapeutic art. However, the history of medicine knows that even Hippocratic medicine, when it became the possession of those who would keep it and hold on to it as a lever of or for power, degenerated into dogmatism, and that Galenic medicine met the same fate. It took many centuries before the Hippocratic and Galenic traditions were revived as true tradi-

tions rather than the dogmatic possessions of a few hundred thousand men.

As I have already said, the presentation of Freud's ideas and theories is of necessity too summary in this volume to be viewed as an original contribution. As to the personality of Freud, there is a definite contrast between the portrait of Freud as offered in the first volume and that offered in the second.

Jones seems to cling rather tenaciously to the myth that Freud, while he was writing his *Interpretation of Dreams* and was in steady correspondence with Fliess, underwent what amounted to a thorough and even masterly psychoanalysis by himself—a truly gigantic psychological task; this analysis over, approximately in 1899-1900, so runs the tradition. Freud proceeded as if unimpeded by unconscious difficulties and developed into a uniquely "mature," objective, realistic personality. It is quite true that Freud did a remarkable piece of psychological work on himself, which gave him an immense insight into the workings of his own mind and that of others. However, it is also true that in daily human relations Freud was rather a poor *Menschenkenner*, and the history of his great enthusiasms for and disappointments in his friends-collaborators is testimony to a "weakness" which is not foreign to a great many great men. Moreover, it is rather mythological to tend to consider Freud "mature" and "fully analyzed" just because of the immense inner work he accomplished while working on his *Interpretation of Dreams*.

The beauty and puzzle of it all is that Freud was far from that ideal postanalyzed personality which Jones tends to emphasize. Freud's fainting spells (as a result of severe emotional tension), which Jones himself cites, the almost constant dour, depressive cast of Freud's affect, his remoteness and almost complete absorption in work, bespeak a great deal that is not entirely the ideal picture of what the jargon calls "a well-adjusted person." Freud's original faith in the success of the German U-boat war and the ultimate victory of the Central Powers during World War I bespeak a rather usual reaction of the ordinary citizen of a German-speaking country at that time. All this should not be held against Freud of course, but it certainly does not reveal a deep insight into the cultural tragedies of his time. In this respect Freud stood somewhat behind some of his own contemporaries, both in Germany and Austria.

This all-too-human aspect of the *homo politicus* in Freud is perhaps not even surprising, for from the standpoint of sociological perspective Freud's horizons were rather narrow. There is no special reason why this should be otherwise—unless one would indulge in the cult of personality. I am afraid that this is a more or less general tendency which Jones reflects frequently—so much so that Freud's obvious faults are cited at times as virtues. Thus, Jones describes an incident, seemingly to show how good a *pater familias* Freud was: Freud once came into possession of an antique statuette which he valued greatly. He brought it with him to the luncheon table where his family

foregathered, this being one of the very few periods during the day when they could see the busy man. All through the luncheon Freud looked at the statuette without uttering a word; luncheon over, Freud and the statuette proceeded to the office, back to work.

In full justice to Jones, it must be said that whatever his bias and some rather prejudiced interpretations, the figure of Freud stands out as that of a complex man with all his small and captions little peculiarities, with all his weaknesses, shadows and lights. The riddle that is Freud thus remains a riddle. For even the most punctilious psychoanalyst is unable to explain how this ambitious man, this anxious man who never throughout his youth, middle or old age was free of almost constant fear of death, who had a constant preoccupation with his bowels and an almost insatiable ambition to be great, how this man did in fact achieve greatness—and, who knows, probably immortality—in the history of man's endeavor to understand man.

GREGORY ZILBOORG, M. D.,
New York City.

MEDICAL RESEARCH: A MIDCENTURY SURVEY.
Vol. I: American Medical Research in Principle and Practice, 765 pp. Vol. II: Unsolved Clinical Problems in Biological Perspective, 740 pp. Edited by Esther Everett Lape and Associates. The American Foundation. (Boston: Little, Brown & Co., 1956. \$15.00 the set.)

These two volumes contribute importantly to the understanding of what is going on in medical research at the present time. The introduction to Volume 1 discusses the philosophy back of the various studies reported and indicates what concepts and methods guided the workers' procedures. Four main parts follow: 1. Medical research in the perspective of biological, chemical, physical and mathematical science; 2. Current trends and current problems in medical and biological research in the United States; 3. Research agencies; and 4. Clearing results and controlling the products of medical research. An appendix of 22 pages gives the major sources for the material.

Volume 2, also with an appendix of major sources, begins with a discussion of current metabolic concepts orienting research in biology and medicine. The next 9 chapters take up what are considered the most important unsolved clinical problems, presented as follows: cancer, infertility, arteriosclerosis, hypertension, the rheumatic syndromes, tuberculosis, the nature of viruses and of virus diseases, alcoholism, and the biology of schizophrenia.

To present an adequate review of these two volumes is an impossible task. So important and valuable is the material that one could devote to a single chapter several times the space of an ordinary book review. So well do these 2 volumes accomplish their purposes that anyone who wishes to be in touch with the recent research work and with the different trends in present and future investiga-

tions should put these at the head of his reading list.

The introductory chapter outlines why and how the survey of medical research was made. It emphasizes that, while the public may be preoccupied with the cost of medical care, the only real health insurance lies in providing an adequate number of well trained and competent health personnel. This is especially important for the "adequate support of medical education and research." Medicine should be regarded as a life science involving the whole field of biology, and it is necessary to support and expand research in this field as well as in chemistry, physics, and mathematics. Although such support "is not yet the animating principle of our national policy or of prevailing public sentiment . . . the medical research involved must be in biological perspective, utilizing the contributions of chemistry, physics, mathematics, and the results of research on atomic energy. This is the thesis of this study; it is the point of view of the American Foundation, of its Committee of Consultants, and by every implication of the hundreds of investigators and teachers that contributed to this work."

The editors point out that the reports on unsolved clinical problems, in Volume 2, all have the same dominant purpose—"to present the areas of research, however vast, however remote, however little developed as yet, that seem to bear upon the metabolic mechanisms primarily involved in the given condition . . . They were selected, however, not for these reasons but because of the way in which they illustrated disturbed structure and/or function reflecting disordered chemical processes of cellular metabolism, integration which characterizes the normal healthy organism. Any fundamental solution of these clinical problems is seen to be referable to research in molecular biology, whether concerned with the life and activities of single cells, of specialized cells within complex organisms, or of the organism reacting as a whole through integrating and adapting mechanisms."

Volume 1 then proceeds to explain this process in a 78-page chapter entitled "Medical research in the perspective of biology, chemistry, physics, mathematics, and science." It emphasizes that the concept of multiple causes has now replaced the idea of a specific factor in disease, and there is greater concern with the normal and greater interest in genetic constitutional factors. The interrelation of psychological and physical factors is discussed, as is also the role of chemistry, physics, and mathematics; considerable space is devoted to nuclear physics and radioactive isotopes. The chapter ends with an interesting discussion of the relation of basic to clinical research and the manner in which basic clinical research has contributed to medical knowledge.

Chapter 2 takes up in 192 pages "Current trends and current problems in medical and biological research in the United States." Concepts and general philosophy of planning and organizing research are examined. In pointing out the various sources of funds, the role of foundations, pharmaceutical laboratories and universities in financing research is discussed. In connection with the United

States government's increasing interest in these problems and in financing various researches, the values and dangers of governmental support are well presented, along with several other related matters.

Chapter 3: "Research agencies" in its 489 pages reviews the ways in which the leading universities of this country have set up research. The chapter also covers the role of the independently endowed research institutes, non-teaching hospitals, group clinics, industrial organizations, government, scientific and professional societies, national voluntary health associations, and the National Academy of Sciences.

Chapter 4: "The clearing results and controlling products of medical research," occupies 30 pages, and is followed by an appendix.

In Volume 2, the first chapter, "Current metabolic concepts orienting research in biology and medicine," explains the biological perspective for the research in clinical problems. The 65 pages give much basic knowledge about scientific topics such as protein composition, the enzymes, cellular metabolism, metabolic energy and its utilization, in the course of explaining the correlation and adaptation within the organism as a whole, and thereby laying the ground-work for the remaining 9 chapters. Because of space, I shall limit my discussion to 4 chapters.

Chapter 4: Arteriosclerosis, and Chapter 5, Hypertension, will interest psychiatrists because many of them must deal increasingly with these conditions. The major investigative approaches are excellently described, with emphasis on the fact that structure and function are inseparable. All psychiatrists should read the very careful reviews of cholesterol metabolism in arteriosclerosis and of the theories making cholesterol the main cause of atherosclerosis. The general discussion of hypertension is also excellent. Comparatively little psychiatric material is presented in either chapter, but one should remember that out of the quantity of speculation as to psychogenic bases in the 2 diseases, relatively little work would be considered sound research and worth presenting.

Chapter 9 reviews in 155 pages the whole subject of alcoholism. It stresses metabolic approaches to outstanding psychological and social problems and therefore discusses only briefly at the end the psychological and sociological approaches. A good historical review and a general view of the importance of the problem are included. The material dealing with the metabolism of alcohol represents the present thinking of the best workers in this field, and recent studies on brain metabolism by Kety and by Himwich are correctly quoted. Masserman's experimental work, which shows how animals may temporarily lose certain artificially induced neuroses when given alcohol, is excellently presented. Likewise, the metabolic theories and work of Roger Williams are discussed in a clear and well balanced way. One is brought up to date on the use of hormone therapy, aversion treatment and disulfiram. The discussion of psychotherapy is rather brief, with about a page given to Alco-

holics Anonymous. As a whole, the chapter summarizes well the research work on alcoholism in the last 20 years. The fact that most of the worthwhile research has been along metabolic lines justifies the concentration of the chapter upon the metabolic aspect.

Chapter 10: "The biology of schizophrenia," describes the interaction of physiological, psychological and social factors in its 126 pages. After summarizing past and present concepts of schizophrenia, it examines the possible roles of hereditary, physiological, psychological, and social factors. The discussion of desirable research emphasizes the need for more work in comparative biology and more study of the normal than so far done. Indeed, psychiatry has been charged with being "less interested in the music from normal violins than in the sour notes that come from some violins."

An excellent summary of the physiological research work includes the attempts to correlate the functioning of psyche and soma, with considerable detail about brain localization and special work in biochemistry and endocrinology.

Much of the latest work with lysergic acid, mescaline, and similar drugs is described. The psychogenic approach is rather brief but well balanced, as is the discussion of social and cultural factors. The whole chapter should be read by anyone interested in the latest research in schizophrenia.

K. M. B.

DICTIONARY OF ANTHROPOLOGY. By Charles Winick.
(New York: Philosophical Library, 1956, pp. 579. \$10.00.)

The last anthropological dictionary to appear before the present one was the *Dictionnaire des Sciences Anthropologiques*, published at Paris between the years 1886-1894. That work ran to over 1,100 double-columned pages and was written by the leading experts of the day. The present *Dictionary* is a one-man work and it shows all the deficiencies of being so. Anthropology is far too large a subject for one man to grapple with as a whole, and Winick shows such a profound lack of familiarity with many of its branches that one cannot help wondering whether it was not this very lack which caused him to undertake the making of the *Dictionary*.

Winick is particularly weak on archaeology and physical anthropology. He uses terms which archeologists no longer use, such as "the Epipaleolithic," and when he describes a particular prehistoric culture such, for example, as the Azilian, he omits to mention the implement among others by which it is typically characterized, namely, the microlith. When he defines the microlith he fails to mention that this is the type implement of the Mesolithic cultural phase of man, and that therefore any culture exhibiting microliths will in all probability belong to this cultural phase. Winick's account of the genus *Homo* is quite unsound, as is his account of Galley Hill Man. The discussion of subincision is not only unhelpful, but anatomically incorrect, Winick having some difficulty with the meaning of the term

"posterior," as when he places the acetabulum on "the posterior part of the pelvis." These examples are chosen at random, but they could be greatly multiplied.

Added to the many inaccuracies and inadequacies is the author's rather awkward English and imprecision in the understanding of the meaning of ordinary words. I would sum up by saying that a dictionary of anthropology could have been a helpful contribution; the present work, however, is not only unhelpful but likely to be misleading.

M. F. ASHLEY MONTAGU,
Princeton, N. J.

EDUCATION OF MENTALLY HANDICAPPED CHILDREN.
By J. E. Wallace Wallin, Ph. D. (New York: Harper and Brothers, 1955. \$4.50.)

Dr. Wallin's book is intended primarily for administrators and special education teachers in the area of mental deficiency. Actually, except for a few chapters concerned with the specifics of teaching procedures, it is an important study of the problems and social implications of mental deficiency, and could be read with profit by all persons concerned with this field. It could hardly be otherwise for Dr. Wallin shares with us his experience, research, and philosophy derived from a half century of dedicated service with and for mentally handicapped persons.

The underlying philosophy of his book is that equality in education does not mean identical education for all. He strongly advocates—and his arguments are very convincing—that mentally deficient children have a right to be educated within the framework of the public school system, but preferably in segregated classes. This includes every child who can benefit from a public school education, including those with mental ages of about 3 and Binet I.Q.'s of 35 or 40 (provided that they are relatively stable, toilet trained and have no "obnoxious" habits). It is not an established fact, Dr. Wallin writes, that children with Binet I.Q.'s of above 50 are educable and those below are merely trainable. "In point of fact, there is no sharp distinction between trainability and educability . . . abundant experience has shown that some children below I.Q. 50 are fully as capable of profiting by instruction when the learning situations are adjusted to their needs and capacities as are some children above I.Q. 50."

Psychiatric and psychological examiners will be especially interested in the author's discussion of when custodial care is indicated, the problem of working with parents of mentally handicapped children, and, perhaps most important, what constitutes an adequate examination to determine whether a person can be diagnosed mentally deficient. Dr. Wallin cautions against the use of psychological tests alone for this purpose, which in this reviewer's opinion is a point that can not be overemphasized.

For those directly involved in the education of mentally handicapped children this volume will, I believe, prove to be one of the most significant and comprehensive contributions to the field yet pub-

lished. (Which is not to say that most educators will agree with all of the author's very strong and sometimes dogmatic views regarding certain teaching principles.) The extensive bibliography provided at the close of every chapter will certainly prove helpful to the serious student. The professional person who is only occasionally occupied with the question of mental deficiency will find this volume an authoritative, scientifically based, humanistically motivated contribution to one of society's most baffling problems.

SOL GORDON, Ph.D.,
Philadelphia Child Guidance Clinic.

THE NURSE AND THE MENTAL PATIENT. By Morris S. Schwartz, Ph.D., and Emmy Lanning Shockley, R.N. (New York: Russell Sage Foundation, 1956. \$3.50.)

Without the satisfaction that goes with achievement and personal growth, the nurse cannot be happy on her job, and the nurse's job satisfaction and patient improvement are inseparably linked, the one dependent on the other. This is the theme of this book, unique for its simplicity and clarity of presentation. It is designed "expressly for those who work with the mentally ill."

The authors, one a research sociologist and social psychologist, the other a psychiatric nurse and nursing educator, make use of the case study method in presenting their findings from a year of research. The setting for the project was a hospital of 70 inpatients, the majority of whom were schizophrenics. The 15-patient ward studied housed patients least able to care for themselves. It was well staffed, affording adequate opportunity for intensive personal contacts between patients and ward personnel. It would appear that the problem situations and interpersonal relations were not materially different from those in any other mental hospital.

The book is divided into two parts. Part I deals with recurring problems, namely, fear and patients' combative ness, the demanding patient, the withdrawn patient, the hallucinating, delusional or preoccupied patient; eating difficulties, incontinence, sexual connotations, suicidal propensities and extreme anxiety. These symptoms are not meaningless or purposeless; the law of cause and effect is operative. Then what is the meaning, what is the patient's goal? How may the nurse best understand these symptoms? In what way does she aggravate them? In what way may she modify and correct them? How may she best understand herself? These are questions that the authors answer by individual and group discussions with ward personnel. The personnel participate freely in the discussion and seemingly arrive themselves at the correct answers to their questions.

Part II deals with the all-important questions of understanding, communicating with and relating to the patient. The authors very well characterize mental illness as "the patient's distinctive and characteristic way of participating with others." We can understand the patient only in terms of his

needs. To understand him, one must understand one's self. The nurse, therefore, must understand her own feelings and identifications. She is cautioned not "to get involved." She must be guarded in setting limitations lest she suffer the frustrations of limitless goals. The authors summarize Part II as an attempt to increase the nurse's awareness and understanding of her interpersonal relations with patients. This they accomplish to a gratifying degree.

This book has a place in every nurse's library. It should be invaluable in teaching and discussion groups. It is understandable to the novice in psychiatric nursing and should be a welcomed "refresher" for the more experienced psychiatric nurse. We would venture to say, too, that the less experienced psychiatrist would find reading this book more stimulating and enlightening and less wear ing than many a tome in the medical library.

JOSEPH G. SURTON, M.D.,
Cedar Grove, N. J.

PSYCHOANALYSIS AND PSYCHOTHERAPY. Developments in Theory, Technique, and Training. By Franz Alexander, M.D. (New York: W. W. Norton & Company, 1956. \$4.75.)

In this book Dr. Alexander discusses psychoanalysis as a scientific discipline and its place within universities and medical institutions. He presents the divergent views of prominent psychoanalysts and psychiatrists in regard to theory, technique and training, along with a vigorous presentation of his own position.

Much of the disagreement concerns the extent to which analytic conditions can be modified without changing the nature of the process itself and of the psychological and emotional content brought into the therapy. Alexander believes that, while the traditional Freudian method is the best for research purposes, present-day knowledge allows changes in technique which can improve and extend the therapeutic possibilities. This latter goal remains his special concern.

Any analysis requires establishing certain artificial conditions. He believes that these can be so selected as to influence the course of treatment. Thus, a therapist with sufficient skill and knowledge can assume roles in relation to the patient differing from those taken by disturbing figures in the patient's past life and, by doing so, can potentiate the therapeutic corrective experiences. He maintains that planned manipulation of such things as timing and frequency of sessions can help avoid pathological dependency on the part of the patient and increase the effectiveness of treatment. He warns repeatedly that such manipulations require more skill and knowledge than routine analytic handling and create their own special problems.

The technical innovations which he advocates highlight unanswered questions relative to the amount of resolution possible through vicarious experience in the analytic transference situation, versus that which must be worked out in actual life experience. Traditionally, analytic treatment has

emphasized the former, with psychotherapy emphasizing the latter. Hopefully, in a given case, when the inner problems have been sufficiently resolved, the patient can go on to effective action in real life with a consolidation of the gains made in the analysis and with further increases in strength and security through successful life experience. As Alexander emphasizes, such questions can be answered only through controlled experiments in therapy, with clear differentiation of the technical devices employed, clear diagnoses and precise selection of cases.

The author discusses the training for psychiatrists intending to do psychoanalytic therapy and the training for those intending to restrict themselves to other forms of treatment. He believes that all psychiatric residents should be selected carefully, that they should receive a broad knowledge of psychoanalytic principles, and that all suitable candidates training to do psychotherapy should have a personal analysis (or, perhaps, personal psychotherapy, if future experience should prove this satisfactory). He emphasizes that all those planning to carry out therapeutic psychoanalysis should receive training such as is now carried out in the psychoanalytic institutions, with a personal analysis as a prerequisite.

In his previous writings, Alexander was accused of confusing the issues by weakening the differentiation between psychoanalysis and dynamic psychotherapy. In the present book he attempts to avoid this confusion by stressing that a continuum exists between the radically different extremes and forms of psychotherapy which blend one into the other. He pleads for careful study on the part of psychiatrists and psychoanalysts of the as yet imperfectly understood factors which are responsible for therapeutic success or failure.

This book will have a wide audience and should encourage further basic studies of psychoanalysis as well as of ways of applying it most effectively to the problems of general psychotherapy.

RICHARD L. FRANK, M.D.,
New York City.

THE DRUG ADDICT AS A PATIENT. By Marie Nyswander, M.D. (New York: Grune & Stratton, 1956. \$4.50.)

This book was written to "share" the author's experience with her medical colleagues. It is "geared" to the physician in general practice with the hope that it will be useful to a wide group of professional people who have contact with addict patients. The emphasis that the author places on drug addicts as patients is the strong point of her book. She reminds us time and again that this is a medical problem. It is not, however, unrelated to law, sociology, and criminology.

In considering the prevalence of drug addiction today, the author is well aware of the difficulties involved. However, she gives the impression that drug addiction has continued to increase throughout the years. There is considerable doubt that this is

true and certain figures indicate that it is on the decline. Selective Service examinations furnish one such set of figures. During World War I, the rate of addiction was approximately 1 in 1,500 draftees. During World War II, the rate was roughly 1 in 10,000. The Commissioner of Narcotics estimates that there was 1 addict in every 400 persons in the United States prior to the passage of the Harrison Narcotic Act. Currently he estimates that the rate is about 1 addict in 3,000 persons.

There is considerable evidence that any increase in drug addiction in young individuals is centered, for the most part, in large metropolitan areas with very high concentration in minority groups such as the Negro and Latin-American. Sociological factors, no doubt, play an important role in the increased incidence of this type of addiction.

Considerable data are presented in the first chapter supporting the conclusion that the narcotic clinics that existed in 1920 to 1924 were closed by the Bureau of Internal Revenue, thus permitting the Bureau to gain control of the medical treatment of addiction. There is, however, a considerable body of information indicating that physicians themselves were dissatisfied with the operation of such clinics and exerted their influence through the American Medical Association to have them closed. In 1920 and 1921 the Committee on Narcotic Drugs of the Council on Health and Public Instruction of the American Medical Association made investigations and recommendations that the "American Medical Association urge both Federal and State governments to exert their full power and authority to put to an end all manner of so-called ambulatory methods of treatment of narcotic drug addiction, whether practiced by private physician or by the so-called 'narcotic clinic' or dispensary." This same Committee was also charged with visiting the Attorney General to obtain a decision from the United States Supreme Court to remove uncertainties as to the meaning and application of the Harrison Narcotic Act. This act resulted in the Behrman case and the ruling handed down by the U. S. Supreme Court. It may not be possible at this late date to say just what all the factors were that were instrumental in closing the narcotic clinics, but it does not seem reasonable to place all the blame or give all the credit to the Commissioner of Internal Revenue. Organized American medicine, because of basic dissatisfaction with the clinics, exerted considerable pressure to close them and for very valid reasons. There was also considerable dissatisfaction with the so-called "script doctors" as described by Prentice. These were a small number of unscrupulous individuals who were well known and accessible to all the addicts in the community. These individuals were patronized by the addict not because he was in need of the physician's advice or skill but solely because the addict knew that the "script doctor" would provide "drugs."

In the chapter entitled "Rehabilitation," the author describes a method of treatment that she refers to as "ambulatory hospitalization." It implies

that such treatment is available in many private psychiatric hospitals. This, in the experience of many physicians, has not proved to be the case. Moreover, most authorities believe it is essential in any hospital treatment program for narcotic addicts that adequate control of the patient by the physician be established for some time. The addict has lost the power of self-control over the use of drugs and it is necessary for someone else to exercise control until such time as the patient can be placed in outpatient care where he can continue to receive assistance in exercising control of himself.

The author implies that ambulatory hospital treatment is a desirable and successful form of treatment for many drug addicts. It would be more convincing if some data were given supporting these findings.

She states that at the Federal hospitals an attempt is made to separate first admission voluntary patients from the "recidivists" who comprise the majority. No such segregation is practiced and readmitted patients do not constitute the majority. Only 30% of patients are admitted to Lexington more than once. Also she states, "Hospitals such as Lexington give little or no psychiatric help." This will come as a surprise to the eight psychiatrists on the staff, five of whom are Board diplomats; to the twelve residents in psychiatry; to the five psychologists, two of whom are Ph. D. clinical psychologists; to the five social workers; to the nurses and to the rehabilitation staff and the psychiatric aids. It will be a surprise to many of the 1,050 addict patients.

Dr. Nyswander is apparently convinced that the "clinic plan" advocated by the New York Academy of Medicine is the most desirable to follow in the future. Many physicians and others with considerable experience with addicts do not agree with her. The suggestion is made that a program be developed whereby sufficient amounts of drugs can be legally and inexpensively supplied to the addict while attempts are made to persuade him to undergo treatment. "Addicts resistant to undertaking treatment and continuously refractory to therapy, despite all efforts, should be supplied legally and cheaply with the minimum amount of their drug needs; and efforts to persuade them to undergo rehabilitation should be continued." Treatment for addiction is most difficult at best. The possibility of receiving drugs if treatment fails would be an insurmountable obstacle to overcome in a therapy program.

The book has ten chapters. The first and last chapters need to be examined critically since many of the statements are open to question and are difficult to evaluate. The other chapters contain useful information regarding narcotic addiction. The author draws quite heavily on the publications of the Addiction Research Center at the U. S. Public Health Service Hospital, Lexington, Kentucky.

ROBERT RAYSON, M. D.,
Lexington, Ky.

OTHER PEOPLE'S CHILDREN. By Anna Judge Veterans Levy. (New York: Ronald Press Co., 1956. \$3.75.)

Judge Levy has drawn from her 8 years experience on the bench of the juvenile court in New Orleans, to produce this human interest description of cases that have appeared before her.

The book is in no way a textbook of delinquency but produced solely to stimulate the interest and participation of the intelligent lay reader. It should also be recommended for social scientists studying the phenomena of juvenile delinquency as it gives some insight into the wholesome desire of the law for more knowledge of the psychodynamic mechanisms which produce antisocial behaviour.

Judge Levy has summed up, in the epilogue of her book, the basic philosophy of the juvenile court movement. There is an air of optimism in her remark that this philosophy is "only a little more than 50 years old."

Professional workers engaged in court clinics frequently find it necessary to describe the problems they are dealing with to adult education groups. This book may be recommended for consideration in group work of this kind.

The philosophy of the juvenile court movement cannot further develop until society accepts its basic tenets. The reader cannot help but be left with an increased respect for its tenets after reading Judge Levy's dramatic description of the problems encountered in her jurisdiction in New Orleans.

J. D. ATCHESON, M. D., D. PSYCH.,
Tortono Juvenile Court.

PSYCHIATRY AND THE PUBLIC INTEREST. By Maurice H. Krout. (Minneapolis: University of Minnesota Press, 1956, pp. 217, \$4.00.)

This volume, edited by a psychologist and containing chapters by 15 psychologists, presents various professional points of view on the title subject. As a summary of the psychiatrists' position on the role of psychology in society, it includes the *Resolution of Relations of Medicine and Psychology* issued jointly by the American Medical Association, The American Psychiatric Association, and the American Psychoanalytic Association, and a letter from the chief medical director of the Veterans Administration to all V.A. medical installations stating V.A. policy on the role of the clinical psychologist in the Veterans Administration Department of Medicine and Surgery, and two clear papers by Dr. Paul Huston.

Since the book's stated purpose is to contribute to understanding, the medical reader may be slightly startled to learn in the preface that The American Psychiatric Association and the American Psychoanalytic Association are "both branches of the American Medical Association." These inaccuracies probably reflect the sad fact of a climate of thinking in the minds of some people in which association leads to presumed identity or in which discrimination becomes unimportant, rather than any

intent to misinform. As a matter of emphasis, it is of interest that the letter stating V.A. medical policy, which the chief medical director sent to all V.A. medical installations, is described as "a summary of these policies as communicated to the A.M.A. by the chief medical officer of the V.A. a few years ago."

There is material of interest for psychiatrists in the first 3 chapters, which are historical and introductory. There is even more of value in the 5 chapters of considered discussions on the psychologists' position on their role in collaborative situations. Three of these are by psychologists working in medical settings. A fourth is really on the role of a psychiatrist in a psychological clinic. One by Dr. Fred McKinney, relating to psychology and psychiatry in educational contexts, takes a dim view of some portions of G.A.P. report No. 17 on "The Role of Psychiatrists in Colleges and Universities" and presents some well-reasoned objections to them.

Section 4, titled, "The Psychologists' Position on Their Role in Independent Practice," contains the statements to which most psychiatrists (and for that matter, many psychologists), will take exception. Many psychiatrists may not be aware of the way in which fields they usually regard as their own are considered by others.

Dr. Krout views the present situation as confusing to the public and to the professions, and believes it possible that in the long run "psychiatry will take over all of what is now known as clinical psychology." He sees as the alternative "that professional psychology will remain an independent entity, absorbing a certain part of what is now functionally the domain of psychiatry." In this event, Dr. Krout considers it "certain that psychologists . . . with training expanded . . . will tend increasingly to concentrate upon the diagnosis and treatment of the milder types of emotional disorder, in which the symptoms have not become obvious in tissue change or organ pathology, which the psychiatrist has inherited but for which he is neither prepared by training nor qualified by interest in differential or social psychology."

Dr. Krout lists as conditions "for the treatment of which the practicing psychologist would seem to be amply qualified," not only such items as educational problems (to which very few if any psychiatrists would take exception), but also anxiety neuroses, obsessive-compulsive neuroses, reactive depressions and hysterical conversions. Dr. Krout does not discuss the resolution of the diagnostic problems involved in differentiating what is a hysterical conversion from a somatic illness, or in differentiating an anxiety reaction, for example, from a cardiac disorder.

Dr. Emanuel K. Schwartz expresses the opinion that the medical profession is not concerned primarily about public interest in this matter. "The fact that the clinical psychologist has for a long time been almost totally dependent upon the psychiatric profession and medical institutions for specific kinds of training in psychological diagnosis and therapy is to be deplored. More and more

medicine has taken action to curtail opportunities, formerly available to psychologists, for getting experience in medical settings. . . . In view of the great need for trained personnel, such activity on the part of psychiatry seems antisocial and can only derive from a willingness to put professional interests before those of society as a whole."

"Social change and human needs seem less important to medicine than the maintenance of exclusiveness and private rights. The resolution of this conflict however, lies not in the hands of organized medicine or organized psychology, but in the enlightened decision of the public."

Dr. Carl Rogers contrasts the authoritative physician-patient relationship he believes appropriate for dealing with problems of organic illness with the client-centered relationship he deems necessary for psychotherapy. In stating his second condition for psychotherapy, he elevates an element which, in the judgment of most psychiatrists, is a matter of technique, to the level of a professional faith—a faith in the need for a "complete willingness of the therapist for the center or focus of evaluation and responsibility to remain with the client." This is a method which he has found effective in dealing with many maladjusted and/or psychoneurotic individuals but which, on its face value, and without transforming modification, is not generally applicable to the psychotic patient, nor to the severely psychopathic patient.

There is much criticism of present levels of training for the practice of psychotherapy, and particularly of the training (or lack of training) of physicians. There is much discussion of the preparation needed for the practice of psychotherapy but very little discussion of the problems of and need for diagnosis, except in the limited sense of psychological diagnosis. There are, however, various concessions, which indicate a realization of the fact that organic problems may complicate the treatment relation. Dr. Harry Bone states, "Where organic factors, as either cause or effect, are of such a nature as to require the services of a physician or a psychiatrist, the competent clinical psychologist enlists their collaboration or refers the client to them."

It is in the late Dr. Robert Lindner, to whom this book is dedicated, that the independent practice of psychotherapy by psychologists finds its most outspoken champion.

". . . Our pragmatic and technological time militates against the medical schools ever qualifying the kind of practitioners required. They could do this only at the risk of turning out poor physicians. Meanwhile, the sorry efforts of the unprepared medical practitioners of psychotherapy have enervated the field, and their dog-in-the-manger attitude, in the face of all evidence, has led psychotherapy into a scientific *cul-de-sac*, has forced it to subsist on borrowed theories, thus impeding its independent development, has opened it to the diversiveness we see everywhere about us, and finally, has given it the stamp of learned ignorance rather than true learning.

"These labels—sickness, illness, disease, etc.—are essentially conveniences and nothing more. But the point is that by our careless usage of them, we have given encouragement to a conceptual stereotype for which we are now paying the price of diversiveness in psychopathology and psychotherapy. The force of these labels has made us prey to all of the ancient traditions, superstitions, and phantasies underlying and sustaining the image of the 'medicine man,' the 'healer,' and the 'magician.' With the employment, so loosely and in so ill-considered a manner, of terms that should properly be reserved and strictly confined to organic medicine and its palliative techniques, we have become committed in psychotherapy to a logical fallacy of the first magnitude, and to an anachronism that blocks progress."

Concerning the need for medical diagnosis, Dr. Lindner has the following to say, "I would explain how the argument of the promedical section that 'the special training and discernment of the physician are required to rule out the presence or incipience of organic disease' in a given case is countered by the arguments that the newer tools of clinical psychology are quite capable of performing the same office; that the conscientious psychotherapist—nonmedical or medical—is always alert to this possibility and avails himself of the proper safeguards; and that, in any event, no degree of any kind can change the sow's ear of the unimaginative blunderer into the silken purse of a sensitive differential diagnostician."

Somehow, this reviewer could not help being intrigued by the figure of speech chosen. Could it be that Dr. Lindner, who, by common standards achieved success is explaining that no degree will make unimaginative listening fill the diagnosticians pocket?

Passing over this possibly naughty question, the fact remains that the chapters in this section were contributed by men of ability, and in some cases, of leadership, men who generally reflect a degree of consistency and professional conviction, and who are certainly not grossly unacquainted with the field of which they write. They represent, not the majority opinion of the psychological profession, but rather the more extreme positions among psychologists. However, these views are well articulated by energetic individuals with persuasive capacities. They are, thereby, the views which are most likely to become predominant in the psychological profession if present efforts toward a better understanding and better working relationship be-

tween psychiatry and psychology should fail. Such failure might be expected to result, at least temporarily, in the public tragedy of two competing healing professions, medicine and psychology, in open warfare with each other.

RICHARD L. JENKINS, M.D.,
Washington, D.C.

SCHULDGEFÜHL UND SCHULD BEI PSYCHIATRISCHEN ERKRANKUNGEN. By W. v. Siebenthal. Zurich: Rascher Verlag, 1956. D.M. 18.)

This study is concerned with the pathological feeling of guilt, whether overt or latent, which is not merely symptomatic but may stand as an "objektive Qualität zur existenziellen Schuld"—objective quality in relation to guilt which exists *de facto*. The book, whose sub-title is "Ein Beitrag zur anthropologischen Begründung der Geisteskranken" (a contribution to the anthropological basis of the mentally ill), aims to present an "open system," to dispense with fate as a factor in mental illness, to draw anthropological conclusions from medical observations of the sick, to "restate" the truism that "sick" and "healthy" are empirical concepts, and to begin and end every study with the feeling of guilt.

While the theoretical aspects of the book open a new vista, particularly for American readers, the (significantly) all too brief chapters on therapy may amuse American readers, particularly when the author quotes Weizsäcker's "The goal of medicine is not to cure people," or Mueller-Eckhard's "The hallucinations of a patient constitute a major stage of healing, an enormous reconstruction." Although not basically oriented towards any specific school of psychology, the book retains some of the Jungian flavor distinctive of most titles published by the same firm; e.g., archetypes are the background to anthropological researches whence Jung received some of the inspirations for his ideas. The book is filled with psychiatric case material, such as Gaupp's "Zur Psychologie des Massenmordes," (the psychology of mass murder.)

It is regrettable that the author seems to have leaned rather heavily on Mueller-Eckhard's sensational concept, "Die Krankheit nicht krank sein zu können" (the illness of not being able to be ill). Regrettable also is the omission of an index and a bibliography.

HANS A. ILLING, PH.D.,
Los Angeles, Cal.



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1. Overholser, W., in Chlorpromazine and Mental Health, Philadelphia, Lea & Febiger, 1955.

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1. Leake, C. D.: Ohio M. J. 52:369 (April) 1956. 2. Ferguson, J. T.: Ann. New York Acad. Sc. 61:101 (April 15) 1955.

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As is the case with ataractics, FRENQUEL may be effective as initial therapy for some patients, ineffective for others. In a recent article, Coats and Gray³ report improvement in 40 per cent of 75 patients, most of whom had been ill for at least five years. Patients began to react more spontaneously, delusions were decreased, and emotional reaction became more appropriate. "In 4 instances this improved behavior has been sufficient to permit the patient to be discharged from the mental hospital." Another report attributes success to FRENQUEL in 13 to 15 per cent of patients who had failed to respond to chlorpromazine or reserpine.⁴

Although the mechanism of action of FRENQUEL remains obscure, the drug does appear to have some specificity for the hallucinatory and delusional aspects of mental illness. The dramatic successes produced in some cases, and the highly praised safety of the drug, strongly recommend it for trial wherever dissociation or confusion is a component of the disease.

1. Rinaldi, F.; Rudy, L. H., and Himwich, H. E.: Am. J. Psych. 112:343, 1955.
2. Browne, N. I. M.: J. Nerv. & Ment. Dis. 123:130, 1956.
3. Coats, E. A., and Gray, R. W.: Nebraska State M. J. 41:460, 1956.
4. Feldman, P. E.: Am. J. Psych. 113:589, 1957.
5. Bowes, H. A.: Am. J. Psych. 113:530, 1956.

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1. Proctor, R. C., and Orland, T. D.: Nerv. Syst. 17:23, 1956.
2. Fabing, H. D.: Neurology 5:319, 1955.
3. Rinaldi, F.; Rudy, L. H., and Himwich, H. E.: Am. J. Psychiat. 112:343, 1955.
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5. Ferguson, J. T.: Frenquel: Use of a new psychotropic agent in chronic schizophrenia, presented before the Am. Psychiat. Assoc., Chicago, Ill., April 30, 1956. (To be published)

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1. Figurelli, F.A.: Indust. Med. & Surg. 25:376 (Aug.) 1956.



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1. Levy, S., *JAMA*, 153:1260, 1953

2. Thompson, L., Procter R.,
North Carolina M. J., 15:596, 1954

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In his summary, Ferguson concluded: "The most notable impressions were the absence of side effects and relatively rapid onset of action with Harmonyl."

Harmonyl in hypertension

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Precautions, Contraindications As with other forms of rauwolfia, Harmonyl must be used cautiously in peptic ulcer and epilepsy and in patients about to undergo surgery or electroshock treatment. Despite the infrequency of reports involving depression, patients with a history of depressive episodes should be watched carefully.

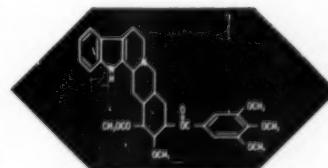
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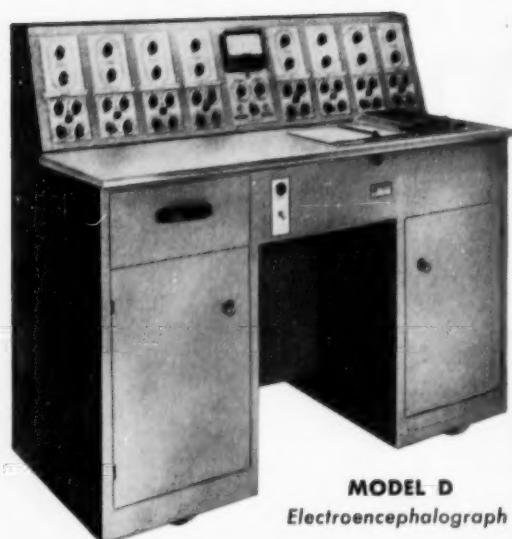
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